Pacific Seabird Group

BULLETIN

Volume 20 Number 2 1993

SHOUT
SHARE
IT

Dedicated To The Study And Conservation Of Pacific Seabirds And Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 out of a need for better communication among Pacific seabird researchers. The Group coordinates and stimulates the field activities of members involved in research and informs its members and the general public of conservation issues relating to Pacific seabirds and the marine environment. Group meetings are held annually and the PSG *Bulletin* is issued biannually. Current activities include involvement in seabird sanctuaries, coastal surveys, seabird/fisheries interactions, and legislation. Policy statements are issued on conservation issues of critical importance. Although PSG's primary area of interest is the west coast of North America and adjacent areas of the Pacific Ocean, it is hoped that seabird enthusiasts in other parts of the world will join and participate in PSG. PSG is a member of the U. S. Section of the International Council for Bird Preservation. Annual dues for membership are $15 (individual and family); $10 (student, undergraduate and graduate); and $450 (Life Membership, payable in five $90 installments). Dues are payable to the Treasurer, whose address in on the back cover.

Pacific Seabird Group *Bulletin*

The Pacific Seabird Group *Bulletin* (ISSN 0740-3371) is published twice a year, in the spring and fall, and contains news of interest to PSG members, including regional seabird research and conservation news and abstracts of papers presented at the annual meeting. The Pacific Seabird Group *Bulletin* is not an outlet for the results of scientific research; however, articles and shorter items on seabird conservation, seabird research activities, and other topics related to the objectives of PSG are welcome. All materials should be submitted to the Editor. Back issues of the Bulletin may be ordered from the Treasurer; please remit $2.50 each for issues of Vols. 1-8 (1974-1981) and $5.00 each for issues of Vol. 9 and later.

Permanent Address

Pacific Seabird Group, c/o Point Reyes Bird Observatory
4990 Shoreline Highway, Stinson Beach, CA 94970

Donations

The Pacific Seabird Group is a nonprofit corporation organized under the laws of the State of California. Contributions to the Pacifife Seabird Group qualify for tax deductions under IRC Section 501(c)(3).

Pacific Seabird Group Bulletin

Dedicated to the study and conservation of Pacific seabirds and their environment

Volume 20 **1993** **Number 2**

5 Alaska's Alien Animals
A look at introduced predators inhabiting Alaskan islands by Ed Bailey

9 Conservation News
Conservation news from Craig Harrison and others

13 PSG Honors Art Sowls
PSG presents its first "Special Achievement Award"

14 PSG Goes to Japan: Part 1
Harry Carter tells about his trip to Japan with Leah DeForest

2 The Chair's Page

3 Letters to the Editor

18 Technical Notes

39 Regional Reports

52 Report from the Marbled Murrelet Technical Committee

53 Abstracts

56 Other Seabird News

THE CHAIR'S PAGE

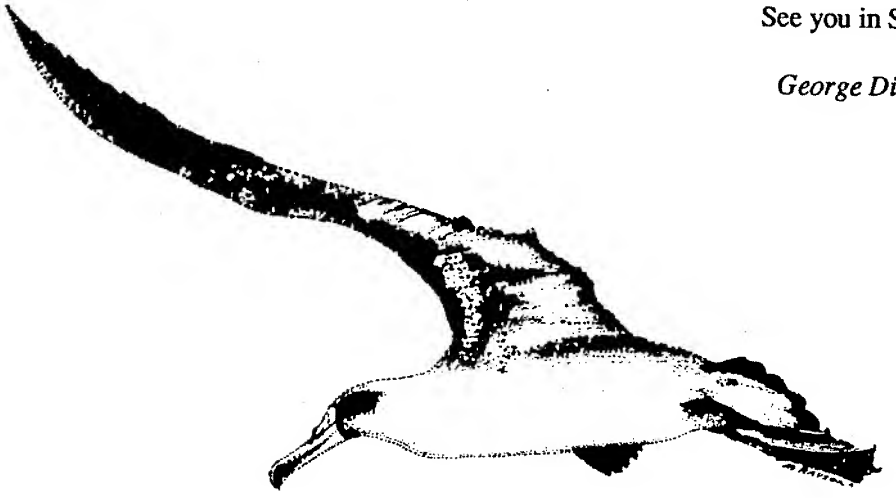
While biologists appreciate the importance of diversity in natural systems, like most humans we are less accepting of diversity in our own societies and organizations. The Pacific Seabird Group has always contained a range of disparate subgroups, including academic and government researchers, agency resource managers, private consultants, industry biologists, and conservationists. Attempting to include under the PSG umbrella the majority of the community concerned with North Pacific Seabirds has allowed the Group to address issues in a way that a group with a more limited membership and mandate could never attempt. In 1991, when the PSG decided to take a more active role in conservation issues, one academic researcher expressed concern that the scientific forum that PSG meetings provided would be lost if the Group began to be viewed as an advocacy organization. The interdependence of issues relating to seabird research, management, and conservation is obvious, and by allowing the PSG to address all of these issues the Group can do much more than if it attempted to restrict its focus.

One of the most obvious examples of how PSG's success is tied to its disparate components is provided by the Marbled Murrelet Technical Committee. The MMTC was able to develop censusing protocols with the input of government, academic, and industry biologists. The inclusion of these groups in the drafting of the protocols has played a major role in the universal acceptance of the censusing guidelines. When differences of opinion about the direction and nature of PSG are being discussed, it is important to remember that the inclusion of different and diverse opinions will ultimately allow PSG to do a better job in promoting seabird research and conservation.

I hope you are able to attend the annual meeting in Sacramento in January. The recently mailed meeting announcement incorrectly stated that participation at the Executive Council meeting would be limited to council members. The ideas and discussion provided by the general membhip have always been an important part of the council meetings, so I urge you to attend the council meeting as well as other meetings addressing PSG activities and priorities.

See you in Sacramento!

George Divoky, Chair



Letters to the Editor

Reinventing Federal Management of Seabird Colonies

With plenty of hoopla, including a photo-op of a forklift piled high with federal regulations on the White House South Lawn, President Clinton and Vice President Gore announced a major effort to reinvent the federal government on September 7. While the ambitious National Biological Survey program is intended to improve the availability of data, the U.S. Department of the Interior's first priority should be to reinvent the use of information already in its possession. No new information is needed to manage alien predators on federal seabird colonies.

In early 1993, chair George Divoky wrote to Secretary Bruce Babbitt on behalf of the Pacific Seabird Group (PSG) to congratulate him on his confirmation to Interior's top post and to wish him success in the stewardship of this nation's biological resources. The letter urged Secretary Babbitt to direct the U.S. Fish & Wildlife Service (FWS) to restore the natural bio-diversity of the seabird colonies in Alaska by promoting an aggressive program to eliminate exotic rats, foxes and other creatures that have caused the local extinction of seabird colonies.

PSG reviewed some of the data that conclusively demonstrates that exotic predators can devastate seabird colonies. PSG asked for strong support from the Secretary's office to ensure that FWS adopt a goal of removing alien predators from all Alaskan seabird colonies by the year 2000. PSG noted that dedicated biologists have lost their lives while attempting to remove exotic predators, in part because they were denied the use of the appropriate toxicants to do the job. PSG asked the Secretary to support limited use of toxicants on remote islands where native species will not be affected.

The response from George T. Frampton, Assistant Secretary for Fish and Wildlife and Parks, is underwhelming. Frampton addressed few of the issues PSG raised, and ignored PSG's request to establish a program to restore the natural bio-diversity of Alaska's refuge islands within a reasonable period of time. Curiously, Frampton claimed that FWS "has been carrying out a rather aggressive program" to remove introduced predators. With funding at less than $10,000 per year, any successes of this program belong to the heroic efforts by individual field biologists and refuge managers, not senior management. Frampton ran the Wilderness Society during an era when it opposed any use of toxicants to manage wildlife. We hope that change at the Department of the Interior will be something different than having new faces implement the same old policies. A reinvented Interior should apply the fundamental principles of wildlife management to restore seabird colonies.

Craig Harrison

Reinventing the Department of the Interior's Law Enforcement Priorities

The U.S. Department of the Interior is responsible for enforcing the Migratory Bird Treaty Act (MBTA), which provides protection for all seabirds, at least on paper. It authorizes civil and criminal penalties for taking birds (including nests, young or feathers) without a permit. Stan Senner reported to the International Council for Bird Preservation this summer on a meeting that he attended with FWS' Chief of Law Enforcement to discuss the Service's enforcement of the MBTA. The Chief of Law Enforcement stated that FWS hesitates to enforce the MBTA because the Service is afraid that enforcing the law would be so controversial that Congress would rescind the Act.

FWS' Division of Law Enforcement does not recoil from enforcing the MBTA when the peccadillos of biologists are involved. In 1991, biology professor Nathaniel Wheelwright was threatened with criminal prosecution and civil fines of up to $75,000 because he brought skins of a road-killed Leach's storm-petrel[1] and six other common species into the United States from Canada. Because of a clerical error by FWS, his collecting permit allowed blood samples but not skins. Dr. Wheelwright volunteered this information to the customs officials, and had been told verbally by an FWS employee that amending his permit was not necessary. Further details can be found in Science 255:406 (1992) and American Birds 46:375-77 (1992).

This summer, the sad case of Dr. Russell P. Balda is told in Condor 95:758-759 (1993). As part of Dr. Balda's plea bargain for failing to insure that his collecting permit was entirely accurate, he was required to humiliate himself in a professional ornithological journal. Dr. Balda's rehabilitation program might have been designed in China during its cultural revolution.

By all means biologists have a professional as well as a civic duty to insure that their collecting permits are accurate and current. By the same token, FWS's Law Enforcement Division has a duty to assess penalties rationally and to use its limited funds and personnel to secure the greatest benefit to wildlife. Why does FWS look the other way when the

largest landowner in Hawaii openly violates wildlife laws, while bringing down the full force and fury of the federal government when biologists make minor errors in collecting permits? The arbitrary enforcement of wildlife laws does not promote effective wildlife management, nor does it inspire public confidence in FWS.

The U.S. Environmental Protection Agency, which already enforces numerous environmental statutes, will soon be a cabinet level Department of the Environment. Perhaps it is time to consider transferring FWS' law enforcement responsibilities to EPA.

Craig Harrison

[1]Twelve foxes consumed 31,000 Leach's storm-petrels in one summer on Baccalieu Island, Newfoundland. If FWS wishes to protect storm-petrels, controlling alien predators on breeding islands is a more fruitful activity than harassing biologists.

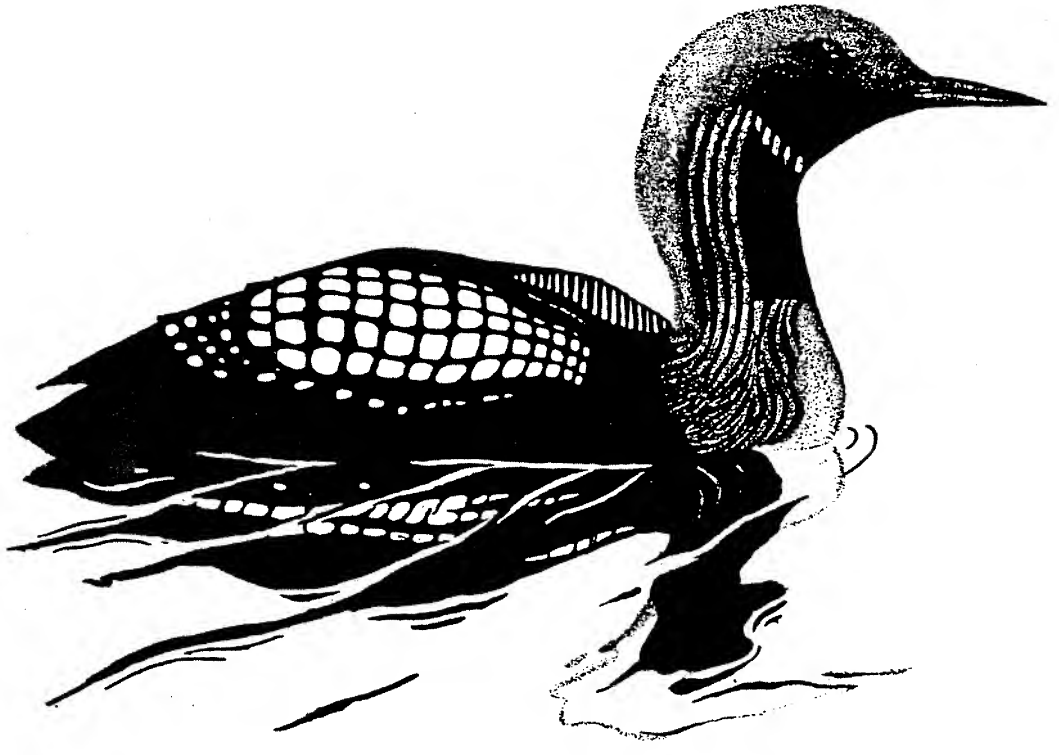
Fifth Alaska Bird Conference and Workshop

• •

4-6 May, 1994, Cordova, Alaska

Contact: Mary Anne Bishop
U. S. Forest Service
P. O. Box 1460
Cordova, Alaska 99574
(907) 424-7212

• •



ALASKA'S ALIEN ANIMALS

Edgar P. Bailey

Most people believe that Alaskan islands are largely undisturbed by modern civilization, especially when compared to the majority of the world's temperate and tropical islands, nearly all of which have been seriously affected by introduced plants and animals and other human activities. Although hundreds of Alaskan islands are currently still uninhabited by humans, few islands escaped the drastic ecological changes caused by the introduction of foxes, ground squirrels, rats, cattle, and other alien animals. Game animals, such as deer, elk, and bison, were introduced to many islands and to the mainland of Alaska.

Foxes

In 1750, only nine years after Vitis Bering landed on Kayak Island in the Gulf of Alaska and the Shumagin Islands (south of the Alaska Peninsula), the first Russian settlers brought arctic foxes from the Commander Islands in Russia and released them on Attu, the westernmost of the Aleutian Islands. Numerous other islands in the Aleutians which had no native land mammals soon were stocked with arctic and red foxes for fur trapping. Aleut midden sites revealed no terrestrial mammal bones before the arrival of the Russians, thus confirming that the Aleutian archipelago west of at least Umnak Island was devoid of foxes and all other land mammals at the end of Pleistocene glaciations, approximately 10,000 years ago. Interisland passes to the west remained below sea level and thus prevented mammals inhabiting the Alaskan or Siberian mainland from colonizing the central and western Aleutians. During glacial periods red foxes reached Unimak, Unalaska, Umnak, and other islands in the eastern Aleutians which the early Russian explorers aptly named the Fox Islands. Foxes and certain other small mammals also naturally reached Kodiak and many other islands south of the Alaska Peninsula and in the Gulf of Alaska by way of ice or land bridges. Foxes are indigenous to virtually all islands in the Bering Sea and Arctic Ocean because they are accessible in winter on pack ice.

Although no documentation exists, it is also possible that Aleuts or other Alaskan natives may have transported small animals to islands on which they were not indigenous. However, this is unlikely in the case of foxes because archaeological evidence revealed that prior to the arrival of the Promyshlenniki, the Russian fur trappers, the Aleuts apparently made little use of foxes. The native people on Kodiak, on the other hand, utilized foxes for furs and pets. As settlement of Alaska by Russians and later Americans progressed, additional species were introduced both deliberately and accidentally on hundreds of Alaskan islands and eventually in various areas of the mainland.

The main impetus for American fox farming originated about 1880 on Prince William Island, located off the Atlantic coast of Canada, and then spread across the continent to Alaska. The introduction of silver foxes, a dark phase of the red fox, on one of the Shumagin Islands around 1880 was believed the beginning of fox farming by Americans in Alaska.

By far the most profound changes brought about by introduced species were on islands because of their biological isolation. Many species of birds evolved nesting on islands free of terrestrial predators and thus lacked defenses for survival when predators like foxes appeared. Unequivocally, the advent of island fox farming, which peaked in the 1930s, was the worst ecological catastrophe experienced in Alaska. Between 1750 and World War II, which ended the insular fox farming era, foxes had been released on over 450 islands from the Alexander Archipelago (southeast Alaska) to the western end of the Aleutians. Most arctic foxes released on islands originated from the Commander Islands or the Pribilofs, but some were obtained from as far away as Greenland. Most introduced red foxes came from Unimak, Unalaska, or other large islands in the easternmost Aleutians or from the Alaska Peninsula, but some reportedly came from the Kamchatka Peninsula in Russia.

The U.S. Government began leasing Alaskan islands for the propagation of foxes in 1882, and by 1900 at least 32 islands scattered from the Alexander Archipelago to the western Aleutian Islands were under lease. Fox farming grew rapidly in the early 1900s, especially after the protection of sea otters and fur seals. By 1925 with increasing demand for fox furs because of fashion trends, the number

---

Editor's note: This article was first printed in the Kodiak issue of **Alaska Geographic**, *Volume 19, Number 3. Portions of this article are incorportated in a paper by D.G. Ainley, W.J. Sydeman, S.A. Hatch, and U.W. Wilson in the symposium "A century of avifaunal change" to be published by the Cooper Ornithological Society.*

of islands leased for fox farming rose to nearly 400 with 36,000 foxes valued at about $6,000,000. In 1928 fur production was the third largest industry in Alaska, surpassed only by fishing and mining. In 1929, the peak year, 9300 arctic fox pelts valued at about $900,000 were exported from Alaska. In the Aleutians alone approximately 27,000 fox pelts were taken between 1913 and 1936. At the zenith of fox farming in the early 1900s outlandish prices were reported. For example, individual pelts of silver foxes sold for as high as $2,800 in London and prime breeding pairs for $34,000! Prime arctic or blue fox pelts sometimes sold for over $150.

Forty percent of island fox farms (182) in the state were in southeast Alaska, followed by the Aleutian Islands (86), Prince William Sound and other islands in the Gulf of Alaska (73), islands south of the Alaska Peninsula (63), and lastly the Kodiak archipelago where foxes were reportedly released on at least 51 islands. In all areas of the state the vast majority of islands was stocked with arctic foxes. Island fox farms drastically declined in the 1930s after the onset of the Great Depression. By 1931 arctic fox pelts from the Aleutian Islands declined from an average of $108 two years earlier to only $32. Attempts to revive island fox farming after World War II failed.

Throughout the world predation by exotic species on islands has been primarily responsible for the decline or extinction of more seabird populations than any other factor, and Alaskan islands are no different. The adverse effects of foxes introduced to Alaskan islands became known earliest in the Aleutians where foxes were first released. As early as 1811, about 20 years after arctic foxes were introduced on Atka Island, local Aleuts were complaining that foxes were driving away birds which formerly were very numerous and whose feathers and skins were utilized for clothing. Likewise, on Attu Island and elsewhere Aleuts were having to go to other islands to secure birds or were forced to use fish skins for clothing. In 1874 William Dall, one of the earliest naturalists in Alaska, portrayed the marked differences in birdlife on islands with alien foxes compared to those still free of introduced predators, but it was not until the 1930s when Olaus Murie documented the vanishing waterfowl and seabirds in the Aleutians that government policy gradually shifted from facilitating insular fox farming to concern for saving some islands for nesting birds. Fox trappers deliberately chose the best bird islands to release foxes on because they merely regarded birds as fox food. On island after island nesting puffins, auklets, storm-petrels, eiders, Aleutian Canada geese, ptarmigan, and other birds disappeared because of introduced foxes. By 1950 Aleutian Canada geese were thought to survive on only one small island in their former range which extended from the Kurile Islands north of Japan across the Aleutians to former small fox-free islands around Kodiak Island. In 1979 and 1982 relict populations of this endandgered species were found nesting on two other small islands.

The havoc wreaked on islands on which foxes were liberated can be illustrated by a few cases where the loss of birds was quantified. For example, a dozen red foxes on a 1500- acre island off Newfoundland in Canada killed an estimated 31,000 seabirds in a single breeding season! This is approximately the same number of birds that were picked up along beaches after the Exxon Valdez oil spill. In 1976 two red foxes reached Shaiak Island in Bristol Bay, site of 156,000 nesting seabirds, and caused severely reduced the nesting success of seven species of seabirds. For instance, most of the 50,000 murres nesting on the island's sod slopes lost their eggs, and all common eiders lost their nests to foxes. Foxes kill far more birds than their immediate needs because they cache birds and eggs for later use when breeding birds have migrated for the winter. The degree of devastation of colonial nesting seabirds caused by introduced predators elsewhere in the world can perhaps be most graphically illustrated on Kerguelen Island in the

southern Indian Ocean where an estimated 1,200,000 seabirds a year are being killed by feral cats, a figure far greater than the total bird mortality caused by the Exxon spill. Besides devastating bird colonies, on some islands foxes ultimately cause pronounced changes in island vegetation because of the lack of recycled excrement from thousands of birds to enrich soils.

Fortunately alien foxes only presently remain on 48 islands in Alaska. In southeast Alaska and Prince William Sound both red and arctic foxes were removed by trappers prior to abandoning their islands or they died out naturally. Unlike on tundra-covered islands south of the Alaska Peninsula and in the Aleutians where foxes continued to thrive on many islands after fox farmers left, they are not well suited to islands covered by rain forest. Foxes disappeared on nearly all islands lacking good beaches for scavenging and foraging for intertidal invertebrates after they eliminated most nesting seabirds, waterfowl, and shorebirds. Fox farmers generally regarded seabird islands as good for only so long, in other words, until the birds lasted.

The U.S. Fish and Wildlife Service began removing foxes from Amchitka Island in the Aleutian Islands National Wildlife Refuge in 1949, but they have been eradicated from only 20 islands to date largely because the use of poisons, the most effective means of eliminating foxes, has been banned. Moreover, less than 1% of the refuge's budget is devoted to eradicating foxes, the activity that benefits island birds the most. The little ongoing fox removal activity relies on the use of traps, but it will not be possible to eliminate all foxes from very large islands without poisons, which can be employed safely in the Aleutians since no non-target land mammals are native to most of the region.

After the removal of alien foxes from several islands in the Aleutians, dramatic recoveries in bird populations have been documented. Aleutian Canada geese are once again nesting on several islands where they were extirpated by foxes, and phenomenal increases in seabirds are occurring. On one small island in the western Aleutians, for example, 24 species of breeding birds increased substantially within seven years after foxes were gone, and 12 species of seabirds rose more than 500%. In 14 years cormorants increased from about 20 individuals to 650! An island in the eastern Aleutians which Murie recommended to continue as a fox farm nearly 60 years ago because foxes had eliminated nearly all the birds now has over 125,000 nesting seabirds. Unfortunately certain extirpated species like ptarmigan on some islands may not be able to recolonize them for a long period.

Rodents

After alien foxes the most severe ecological impacts on Alaskan islands have been wrought by introduced rodents, especially rats. The first known introduction of rats occurred when a Japanese ship ran aground in 1780 on an island in the central Aleutians later named Rat Island by the Russians. In many cases the release of ground squirrels, voles, and other rodents was directly attributed to fox farming. In the early 1800s the Russian American Company encouraged the introduction of rodents on islands as an additional source of food for foxes. Thus, the Russians released ground squirrels on Kodiak and other islands, and later American fox trappers filled barrels with ground squirrels and "mice" and released them indiscriminately on islands to encourage newly imported fox populations.

Besides preying on the eggs and chicks of birds which nest on the surface of the ground or in burrows, ground squirrels, voles, and other rodents as well as rabbits destroy vegetation. On some islands with huge numbers of rodents vegetation has been so extensively overgrazed that severe erosion is occurring. Rats have reached 82% of the world's islands via ships. Twenty-three islands between Kodiak and Attu have rats, and they also occur on some islands in the Alexander Archipelago as well as in certain coastal towns as far north as Nome. Rats reach islands uninhabited by humans mainly by shipwrecks. Most were introduced in the Aleutians during World War II, but the danger is omnipresent that they will reach additional islands from grounded vessels. Unlike foxes once rats become established on all but tiny islands they cannot be removed even with the liberal use of poisons. Unlike some countries like New Zealand the U.S. Fish and Wildlife Service has no contingency plans to deal with maritime accidents in Alaska which could result in the infestation of more Alaskan islands with rats and consequent devastation of nesting birds.

Game Animals

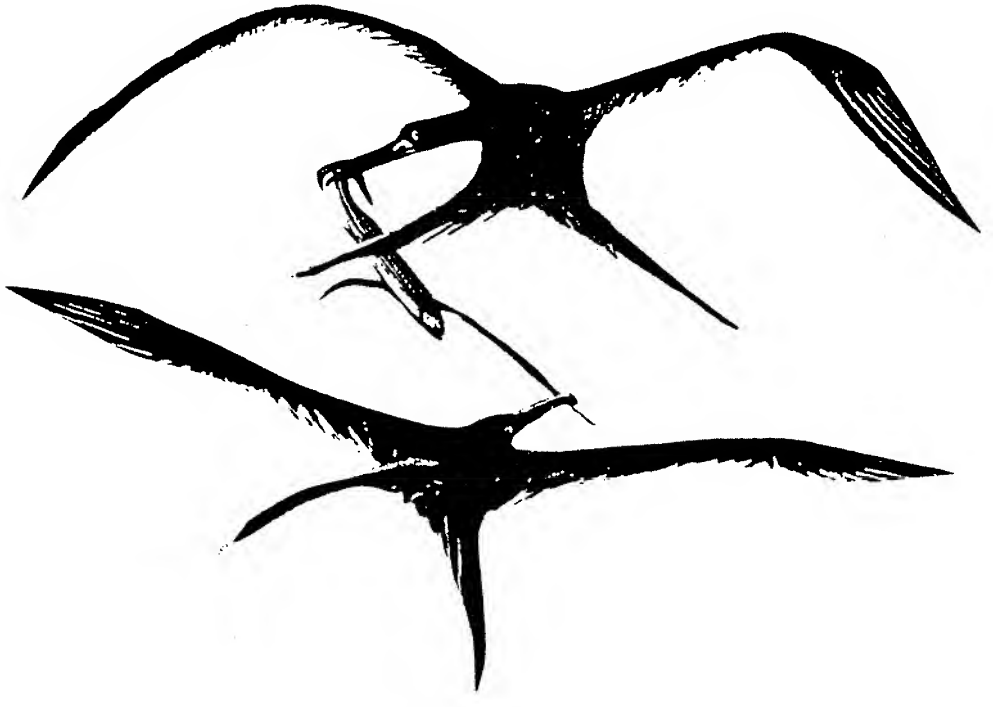
A whole host of animals was introduced or relocated in Alaska for sport hunting or trapping purposes, mainly on islands. In 1916 the Cordova Chamber of Commerce arranged the introduction of black-tailed deer from southeast Alaska, where they are native, to Hinchin brook and Hawkins islands in Prince William Sound. Shortly thereafter deer were released on Kodiak, on islands in Yakutat Bay, and on a few other islands. Some other attempts to introduce deer, such as on the Homer Spit, failed. Moose also were translocated to parts of Alaska to which they did not occur naturally. For example, moose were released on Kalgin

Island in Cook Inlet, Berners Bay near Juneau, and on the Copper River Delta. Moose released on Kodiak Island and a few other locations did not survive. Bison from Montana were introduced to several places on Alaska's mainland, starting in 1928 near Delta. They were also put on Popof Island in the Shaumagin Islands, lying south of the Alaska Peninsula. Afognak Island near Kodiak and three islands in the Alexander Archipelago witnessed the introduction of elk, beginning in 1926. Mountain goats were released on Baranof Island in 1923 and about 30 years later on Chichagof, another nearby island in the southeastern part of the state. Goats were established on Kodiak in the 1950's, also the island to which Dall sheep were translocated in the mid-1960s.

Caribou were transported to Adak Island in the central Aleutians by the Navy in 1958, and reindeer were released on St. Matthew, the Pribilofs, Hagemeister, Atka, Unalaska, Umnak, and other islands. Since there were no wolves, bears, or other natural predators, they quickly become too numerous for some islands to support, resulting in serious overgrazing and erosion. On St. Matthew Island, for example, the herd grew from 29 animals in 1944 to over 6000 in 1963, whereupon the population crashed to less than 50 following an extreme winter. Range damage currently is occurring on Hagemeister Island in Bristol Bay. Similarly, cattle were put on many islands, and on several they were later abandoned, necessitating removal to preclude further extensive damage to island vegetation and soils.

Other game mammals which were translocated to the Kodiak area Afognak and islands in southeast Alaska included muskrat, hogs, beaver, marten, mink, raccoon, red squirrel, marmot, and wolf. Pheasants, bobwhite quail, and Chukar and Hungarian partridges were released at various dates and places, but only ring-necked pheasants survived in a few locations like the Kenai Peninsula. Spruce grouse and blue grouse were brought to Kodiak from other parts of the state, but none survived.

In summation, of the numerous alien species released on hundreds of islands and in some mainland areas in Alaska, foxes by far have caused the most serious ecological consequences and still prove a major challenge to eradicate on certain islands. Reindeer, cattle, and other ungulates also have caused considerable damage in several areas and no doubt compete with native species in certain situations. Introductions of alien animals also pose the threat of bringing diseases to native species. There is ample wildlife in Alaska to hunt and trap without trying to rearrange nature's scheme of things. Altering the natural distribution and abundance of plants and animals which have evolved over great spans of time often bring dire consequences, especially to islands where ecosystems are more delicate because of less species diversity and where, often in the case of birds, unique nesting patterns developed in the absence of land predators.



CONSERVATION NEWS

Craig S. Harrison
Vice Chair for Conservation

The Pacific Seabird Group has been active in conservation during the past year. The following summarizes the most important seabird conservation issues. Members who have information about issues that may benefit from PSG involvement should contact me.

Exxon Valdez Oil Spill (EVOS) Trust Funds

PSG is monitoring the expenditure of the billion dollar restoration fund from the *Exxon Valdez* oil spill. PSG's primary recommendations to the Trustee Council have been to purchase seabird habitat, remove predators from seabird colonies and establish endowed chairs at the University of Alaska for seabird research. In June 1992, PSG commented extensively on the proposed restoration framework, draft work plan for 1992 and the solicitation for suggestions for the 1993 work plan. In November, PSG commented on the draft work plan for 1993. In April 1993, PSG suggested the Trustee Council endow the following chairs at the University of Alaska:

- Seabird Breeding Biology
- Seabird Foraging Ecology and Pelagic Distributions
- Shorebirds
- Marine-Oriented Waterfowl
- Bald Eagle Ecology

Past chair Palmer Sekora nominated Jim King, one of PSG's founders, to the Trustee Council's 17-member Public Advisory Group. Jim's nomination was endorsed by the National Audubon Society and the National Wildlife Refuge Association. In October 1992, the Trustee Council selected Jim to represent conservation interests on the Public Advisory Group. Jim's appointment provides PSG with a rare opportunity to work with the Trustees to improve the restoration program.

The Trustees will circulate a draft restoration plan during spring 1993. Members who are willing to review the plan and wish to assist in the preparation of PSG's comments should FAX their suggestions to me at least two weeks before the public comment period closes.

PSG Testifies to Congress on EVOS Restoration

At the invitation of Chairman Gerry E. Studds of the House Committee on Merchant Marine and Fisheries, PSG provided written testimony at the March 24, 1993 oversight hearing on the restoration of Prince William Sound. Among other things, PSG encouraged the use of the very best science in decision making, supported the purchase of appropriate seabird habitat and urged the restoration of the natural bio-diversity of seabird breeding islands by eliminating non-native predators. PSG also recommended that federal and state agencies use their existing authorities to protect species damaged by the spill (e.g., by curtailing logging or enforcing the Migratory Bird Treaty Act to protect marbled murrelets that drown in gillnets). Finally, PSG expressed concern that the restoration of seabirds has been limited to the geographic area of the oil slick, which ignores injury to migratory seabirds.

PSG's Pacific-Wide Predator Removal Program

Thanks to information provided by regional representatives and other members, PSG has compiled a tentative list of islands where introduced predators should be removed from seabird colonies. As is evident throughout this report, PSG is not waiting for a final list to begin advocating programs to restore seabird breeding islands.

Predator Removal Program in Alaska

During the past year, PSG has written numerous letters to FWS' regional director in Alaska and the refuge manager of the Alaska Maritime National Wildlife Refuge concerning the removal of foxes and rats on seabird islands. By raising the profile of this issue, PSG seems to be making some progress. PSG has been told that fox removal is now one of the highest priorities of FWS' regional director in Alaska. In March 1993, PSG chair George Divoky wrote to Secretary of the Interior Bruce Babbitt and asked Secretary Babbitt "to restore the natural bio-diversity of the seabird colonies in the Alaska Maritime National Wildlife Refuge by promoting an aggressive program to eliminate exotic rats, foxes and other creatures that have caused the local extinction of seabird colonies."

Protocol to U. S. - Canada Migratory Bird Treaty

The United States and Canada are considering a protocol (amendment) to the 1916 Migratory Bird Treaty with respect to subsistence hunting. FWS requested comments on such a protocol. On April 20 1992, former chair Palmer Sekora wrote to the director of FWS and asked that the Service fully implement the migratory bird treaties with Japan and Russia and that the Service ask Congress for authority to enforce the Migratory Bird Treaty Act in the 200-mile Exclusive Economic Zone. PSG worked with the International Council for Bird Preservation, an umbrella organization of over forty ornithological organizations, and the World Wildlife Fund, both of which wrote to the FWS director and raised similar issues.

Seabird Security in Oregon

Roy W. Lowe

Oil spills, gillnet mortality, overfishing of seabird prey stocks and other human-caused environmental perturbations have resulted in seabird population declines at many locations in the U.S. and around the world. Northern California (north of Point Reyes) and Oregon have escaped severe impacts from many of these perturbations and surveys conducted since 1979 show stable or increasing populations for most seabirds. However, there is growing concern for the long term security of seabird colonies throughout this region due to impacts associated with increasing recreational and commercial activities occurring in close proximity to nesting islands and rocks and occasional intrusion into colonies.

These concerns were realized in Northern California this year when it was discovered, after the fact, that two people had gone ashore on Castle Rock near Crescent City and camped there for a 3 day period. Castle Rock, the largest seabird colony in northern California with an estimated 108,000 common murres, is included in the National Wildlife Refuge System administered by the USFWS and is closed to all public access. It is unknown what activities occurred during this incident but the intruders do operate an expedition company. Undoubtedly, there were severe disturbance impacts to murres and the nearly 3,000 nesting cormorants. Auklet and storm-petrel burrows could have been easily collapsed, and four species of pinnipeds were likely harassed. Apparently, it was determined that not enough evidence was obtained to issue any citations and only a warning letter was sent. Technically, these individuals could have been cited for trespass, disturbing wildlife on a refuge, habitat destruction, take of migratory birds, take of marine mammals, and other violations. However, obtaining "court acceptable" proof of most of these violations is nearly impossible unless a law enforcement agent is on site and witnesses the violations. In this incident, about the only thing that could possibly have been proven is trespass which carries a $100.00 fine, hardly a deterrent considering the environmental consequences.

Castle Rock is highly visible, located close to shore, and adjacent to a city. Many of the other colonies along the northern California coast are located in relatively isolated areas where trespass and disturbance from close approaching aircraft and watercraft go unrecorded. Apparently trespass into seabird nesting colonies has also occurred at Fish Rocks in Mendocino County and probably many other locations in northern California. Most of the rocks and islands along this stretch of coastline are administered by the California Department of Fish and Game as part the Offshore Rocks and Pinnacles Ecological Reserve. Regardless of the agency responsible for their management, the rocks, islands, and pinnacles in northern California, all share common traits. Little monitoring of seabird colonies is conducted, human disturbance impacts are poorly documented, there is a general lack of law enforcement, and there is little or no environmental education being done.

In Oregon, we believe our number one problem facing seabirds at the present is disturbance to nesting birds by close approaching aircraft and watercraft. Almost all rocks, reefs and islands in Oregon are administered by the USFWS as National Wildlife Refuges. Public access is prohibited and rarely occurs except at refuge rocks that are accessible from land at low tide. Like the rocks and islands in California, we do not administer the surrounding waters since jurisdiction stops at mean high tide on the rock. If boats or watercraft approach close enough to the rocks to disturb nesting seabirds, they can be cited only if they intentionally disturbed the birds and if one has acceptable evidence showing impacts.

The USFWS began observing and documenting disturbance problems in Oregon in the mid-1980's, and they appear to be increasing annually as more and more visitors come to Oregon's highly accessible coast for recreational purposes. By 1988 it was obvious that further protection of seabird and marine mammals resources was needed. In 1989, at the request of the Oregon Ocean Resources Management Plan Task Force, the USFWS and ODF&W developed a list of 33 major seabird/marine mammal colony sites in need of further protection. We recommended that 500-foot buffer zones be placed around these sites to exclude all human uses, except in cases of emergencies. The proposal was generally well-received until organized opposition from commercial fishing interests began objecting to the buffer zone proposal. Because of these objections, the Oregon Ocean Management Plan, adopted in 1991, did not recommend the establishment of these buffers as proposed. Instead, the plan recommended that fishing and harvest of renewable resources be allowed in close proximity to the rocks and islands unless ODF&W determines that a specific use is impacting the birds and mammals. It also recommends that all other activities be prohibited within 1/4 mile of the rocks. Unfortunately, the majority of the boating activity and disturbances are caused by fisherman.

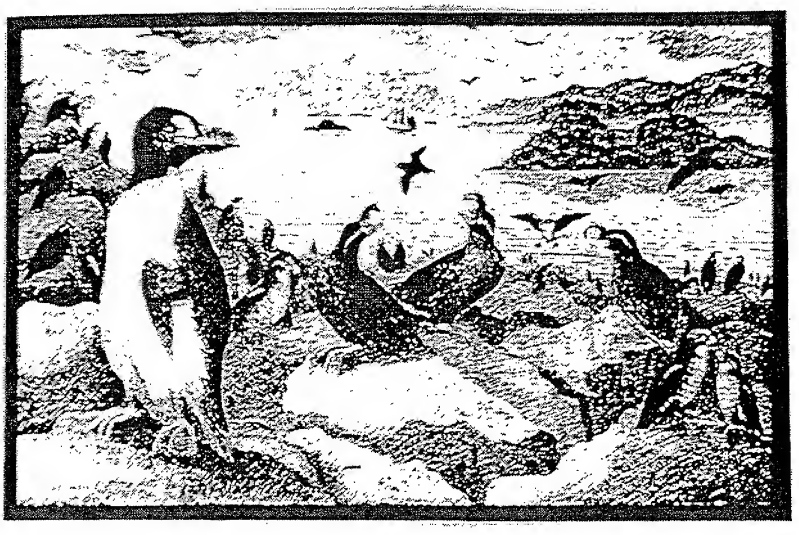
The Ocean Policy Advisory Council, established after the Oregon Ocean Plan was adopted, began to receive

numerous complaints and concerns from local citizens about wildlife disturbance problems on coastal rocks from boats and aircraft. Many of the complaints concerned problems at Three Arch Rocks, the largest common murre colony south of Alaska and a very popular fishing, sightseeing, and boating area. The USFWS had made numerous observations of disturbances there and one local resident kept a log of all the activities she had observed for more than a year, but OPAC refused to consider a buffer zone without additional information.

In the spring of 1993 OPAC requested ODF&W to research human use activities and associated problems at Three Arch Rocks. A cooperative study between ODF&W and USFWS was put together on short notice, and field observations began on 1 May and continued through 9 September. The refuge rocks and surrounding waters were monitored from the mainland using a Questar field telescope and spotting scopes. Types and locations of all human activities were recorded and wildlife disturbances observed were recorded in three severity levels. During the study period, observations were conducted on 79% of all days, averaging 5.5 days/week and 7.5 hours/day. A total of 68 disturbance events by boats, jet skis, and kayaks was recorded and all but 1 of those occurred within 500 feet of the rocks. A total of 478 aircraft flew over the study area and caused 100 disturbance events. While aircraft caused more disturbance events, the majority of these were minor disturbances, such as sea lions looking up at the aircraft. Approximately 59% of the boat disturbances were the most severe type, where birds or mammals were forced to flee the rocks. Establishing a 500-foot buffer zone at Three Arch Rocks would not appear to impact a large number of people. During the study, only 0.3 % of commercial fishing, 0.6 % of charter boat fishing and 6.8% of sport fishing occurred within 500 feet of the rocks. SCUBA divers would be negatively impacted since 92% of their diving occurred within 500 feet of the rocks; however, divers visited the rocks only 16 times. If a 500-foot buffer zone is established at Three Arch Rocks it would not have appreciable economic consequences and would not affect a large number of people.

The study showed that if a vessel approached closer than 500 feet to the rocks it had a high probability of disturbing wildlife. Charter boat operators provide an example of why education alone will not solve disturbance problems. Prior to initiation of the study we met with >50% of the local charter fleet to discuss the problems, educate them on the resources present and their susceptibility to disturbances, and how to operate near the rocks. While this group had been notified of the study and educated in ways of minimizing disturbances to marine mammals and seabirds, some operators continued to go near the rocks and subsequently disturbed wildlife on 42% of the occasions when they got within 500 feet of the rocks.

It appears now that the results of the study may lead to the establishment of a buffer zone at Three Arch Rocks, along with educational and law enforcement efforts. It has taken a large commitment of time, money and effort over a 5-year period to reach this point and there are still at least 32 other Oregon sites worthy of further protection.



Charlotte Van Zant-King's print of the Great Auk, designed especially for the 1993 American Ornithologists' Union Annual Meeting.

RATS: An Alaskan Seabird Management Concern

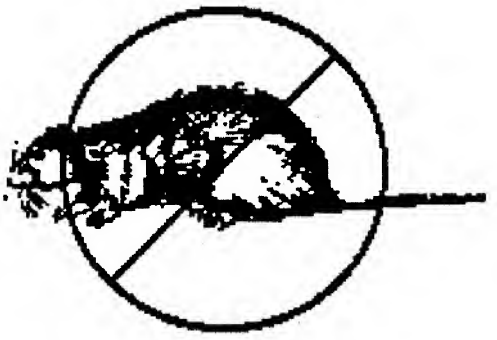
Rats have been introduced to over 82% of the world's island ecosystems and these rodents have been responsible for extinctions and major reductions of numerous native species. Alaska is very vulnerable to rat introductions. Norway rats have become established on at least 22 islands in the Alaska Maritime National Wildlife Refuge have devastated seabirds and other native birds. Unless decisive action is taken, additional introductions will occur on the refuge and other islands.

At imminent risk are the Pribilof Islands, world famous as one of Alaska's premier marine bird and mammal areas. New harbor facilities and a very rapidly increasing commercial fishing industry make rat introduction through the harbor or by ship-wreck likely. Because of new harbors and new commercial fishing regulations (requiring a percentage of the catch to be processed on land) the Pribilofs are undergoing *very* rapid expansion. In the past three years St. Paul has become the third largest bottom fish processor in Alaska (after Dutch Harbor and Kodiak). This fall a new plant will be opened, two vessel processors (one 454 feet long) will be moored at the harbor and trawlers will start entering the harbor. The human population of St. Paul will double before the end of the year.

The introduction of rats would 1) decimate a large percentage of seabirds at some of the largest colonies in Alaska and threaten (through disease introduction) the world's main northern fur seal population, 2) endanger the continued existence of Red-legged Kittiwakes and the Pribilof shrew, 3) cost hundreds of thousands of dollars on rat control just to minimize impact on wildlife, 4) further endanger other islands since a new source of rats to infest ships would have been created, and 5) threaten human health and the economy of the communities of St. Paul and St. George.

Rat introductions to the Pribilof Islands and/or other critical wildlife islands (Forrester, Buldir, etc.) would be one of the worst *environmental disasters ever to occur in Alaska*. Certainly, it would be far worse than the *Exxon Valdez* oil spill, since once established, rats would be impossible to remove. At the minimum, millions of birds would be lost over time.

The Alaska Maritime National Wildlife Refuge has been working with the communities of St. Paul and St. George to minimize the risk of rat infestation. Public education, a trap and bait station program, and negotiations with the fishing and freight industry are in progress. St. Paul and St. George are considering ordinances declaring the harbors a rat-free zone and inspecting ships before allowing them to enter the harbor. The refuge has also prepared an environmental assessment to get approval for the use of toxicants to respond to ship wrecks that could introduce rats to the Pribilof or other Alaska Islands.



President Signs (Irrelevant?) Biological Diversity Treaty

President has Clinton signed the Convention on Biological Diversity, which calls for both developed and undeveloped nations to conserve the world's ecosystems. The treaty embroiled the White House in controversy when former President Bush failed to sign it at the Earth Summit in June 1992 because of concerns of the U.S. biotechnology industry regarding the patentability of products derived from tropical species. President Clinton announced he would sign the treaty once the White House spelled out the U.S. interpretation of the technology-transfer provisions in a way that protects the U.S. biotechnology industry. Some legal experts question whether the treaty will change the status quo. "The treaty's practically irrelevant," stated Stanford law professor John Barton. The June 4, 1993 edition of *Science* quotes a "White House source" who agreed "the benefits [of signing] are not immediately obvious." The fate of U.S. ratification is uncertain since it requires a two-thirds vote in the Senate. In any event, the United Nations Environmental Programme has announced that Mongolia is the 30th nation to ratify the treaty, so it will enter into force on December 29, 1993 for those nations that have ratified it.

PSG Honors Art Sowls

The Pacific Seabird Group is presenting its first "Special Achievement Award" to Art Sowls. The new award recognizes the efforts of its recipient toward the protection and conservation of seabirds. Story by Tony DeGange.

Art Sowls was born and raised in Tucson, Arizona, where he also attended the University of Arizona and graduated in 1973. Art has always demonstrated an ability to make things work and get things done, and he attributes this ability to something that happened to him during his teenage years. One day his father gave his a Model A Ford and told him he could have it if he could get it running. Not only did Art get it running, he drove it to Alaska. This talent for making do and improvising has helped him succeed in his career as a seabird biologist.

Art began his career with the United States Fish and Wildlife Service on the Kenai Moose Range in the mid-1970s. Upon hearing that the new Office of Biological Resources (a now-defunct branch of the USFWS) was hiring people to study seabirds as part of the Outer Continental Shelf Environmental Assessment Program (OCSEAP), Art traveled to Anchorage and was literally hired off the street and given a plane ticket to San Diego, where he boarded a Coast Guard icebreaker bound for Alaska. Despite his height and the confinement of the ship's quarters, Art was well-suited to life at sea. No matter what the conditions, he did not get seasick—something that set him apart from the most experienced Coast Guardsman. While at sea, Art learned to identify seabirds and made observations of their distribution and abundance.

Although he was well-suited to work aboard ship, Art preferred more coastal duties. He received an OCSEAP contract to collate seabird colony data and spent the next two seasons censusing remote colonies. The result of his efforts was the familiar *Catalog of Alaskan Seabirds*, which he put together with the help of Scott Hatch and Cal Lensink. This familiar volume summarized in tabular, map, and pictorial forms the composition, location, and size of every known Alaskan seabird colony.

With OCSEAP funds dwindling in the late 1970s, Art moved to Arcata, California, where he initiated a similar effort to catalog California seabird colonies. The contrast between field conditions in Alaska and California could not have been greater. In California, Art and his crew often found themselves launching their inflatables in the company of surfers, abalone divers, scantily clad sunbathers, and elephant seals. However, because of the high winds and heavy surf, they found boating conditions in California to be as dangerous, if not more so, as in Alaska. The Seabird Census Attack Team (SCAT) of Sowls, Lester, Rodstrom, Nelson, and DeGange became infamous in Fish and Wildlife Service administrative circles for unorthodox travel schedules and travel reports as they motored up and down

the California coast in their overloaded government station wagon. The *Catalog of California Seabird Colonies* was published 1981 and became the template for similar catalogs for Washington and Oregon.

In 1981 Sowls returned to Alaska and labored to update and computerize the colony information in the Alaska catalog, often with limited support from the Fish and Wildlife Service. The original group of seabird biologists brought together under the OCSEAP umbrella was now split into research and management positions, with Sowls going into the latter. For the next three summers, Art studied seabirds on remote St. Matthew Island in the Bering Sea. In the mid-1980s he moved to Homer, Alaska, as part of the new staff of the Alaska Maritime National Wildlife Refuge. Art continued his involvement in the Alaska colony catalog despite his additional responsibilities as the principal seabird management biologist for Bering Sea colonies, including the Pribilof Islands. With the cooperation of the National Oceanic and Atmospheric Administration (NOAA) he developed a user-friendly version of the Alaska catalog for Macintosh computers. The NOAA effort included colonies for the entire west coast of the United States and Alaska.

Currently, Art is involved in monitoring populations of seabirds on the Pribilofs and other islands in the Bering Sea. As the ports of St. Paul and St. George have grown as a result of fisheries development in the Bering Sea, Art has initiated timely efforts to keep the Pribilofs rat-free through prevention and education. He was recently named to a Fish and Wildlife team established to develop preventative measures to keep rats off other important seabird nesting islands in Alaska.

PACIFIC SEABIRD GROUP GOES TO JAPAN: PART I (FIRST FEW DAYS)

Harry R. Carter and Leah de Forest

At the 20th Annual PSG Meeting in February 1993 in Seattle, a small informal discussion occurred during a social gathering about the possibilities of having a symposium on rare alcids at the 21st Annual PSG Meeting in Sacramento. As we fleshed out such ideas, questions of the status of the Japanese Murrelet arose. Wasn't this species the most endangered alcid in the world we thought? What was being done to study and conserve this species? Should PSG become more involved in the plight of seabirds in the western Pacific?

One member of this discussion was Leah de Forest. Her previous bird work in Japan had provided contacts with certain Japanese researchers. In late March, she contacted Dr. Hiroyoshi Higuchi of the Wild Bird Society of Japan (WBSJ) and indicated PSG interest in and concern for the Japanese Murrelet. This inquiry had been preceded by earlier letters from John Piatt and Gus van Vliet. Dr. Higuchi replied immediately and invited two PSG representatives to join an already scheduled WBSJ expedition in mid-April to the Izu Islands to survey nesting colonies of the Japanese Murrelet. I received an excited phone call from Leah and we discussed this incredible window of opportunity. We called the two other PSG members that had been at our informal gathering: John Piatt and Gus van Vliet. We all agreed that someone had to go. Only once in a lifetime do such opportunities present themselves. Leah had received the invitation to go and spoke Japanese. I was the only other one that also could somehow squeeze such a trip into an already overburdened schedule on such short notice. But it would be expensive. There was no time for grant proposals. We called George Divoky, PSG Chair. George immediately recognized the importance of this type of a contact with Japanese researchers. In his long experience with PSG, few Japanese researchers had ever attended PSG meetings, with the exception of Dr. Haruo Ogi, who had attended several meetings in the 1970's. Leah and I wanted 1) to act as "ambassadors" to encourage greater involvement in PSG by Japanese researchers; and 2) to initiate joint PSG-Japanese efforts towards assisting the study and conservation of the Japanese Murrelet. With such a mission outlined in a proposal, PSG decided to help us where no one else could with such short notice by providing much of our plane fare ($2,000 US) to Japan.

We began preparations by collating information from PSG Committees on Pacific seabird issues. Kim Nelson provided a summary of PSG Marbled Murrelet efforts. Scott Hatch sent previous correspondence and information on PSG seabird monitoring efforts. Bill Everett sent a letter of introduction from the PSG Xantus' Murrelet Working Group. George Divoky provided an overall letter of introduction from PSG, recent PSG *Bulletins*, and some PSG T-shirts and tote bags for the traditional Japanese gift-giving. The Western Foundation of Vertebrate Zoology provided several copies of the PSG Marbled Murrelet Symposium publication published in 1992. John Piatt and Gus Van Vliet provided literature on Japanese Murrelets, personal financial contributions, letters of introduction regarding interest in the status of Japanese Murrelet and an invitation to attend the planned rare alcid symposium in Sacramento. Gus also provided a summary of PSG concern for the status of the Kittlitz' Murrelet. Mark Rauzon provided me with some travel books for Japan. Leah and I scrambled to rearrange our lives, arrange additional personal funds to cover travel costs, make further arrangements with Dr. Higuchi, find accommodations in Japan and find camping and field equipment, bird books, and dictionaries (among other things).

The following description of our trip was written from my diary notes. I felt that part of the information and experience that I gathered on this trip was an inkling of the cultural differences between Japan and North America. This sense was critical to appreciating the situation of seabird research and conservation in Japan. Thus, I have included a summary of everything I observed, rather than just specific points that relate solely to seabirds. I truly hope that my observations will be interesting to PSG readers and that they may help bridge a cultural gap without offending our Japanese colleagues who were so kind and generous to us on this trip.

19-20 April 1993

The day finally came for us to leave: Leah from Hawaii and myself from Sacramento. We would meet in the Tokyo airport at some location that Leah was familiar with. I didn't know how I would carry all the gear. While waiting for the plane in Sacramento, I met some Japanese tourists and struck up a conversation. They were so interested in our mission and where we were going that I did not hear the last call for my flight. Fortunately, there was another flight that would allow me to connect in San Francisco. My friend Catherine Madonia met me in the San Francisco airport to lend me a bird book and other travel books. I finally boarded on time for the long trip to Tokyo and sat down with a sigh

of relief. I immediately began reading some literature on the Japanese Murrelet. After awhile, a man two seats over looked at some photos of murrelet chicks (provided by Gus van Vliet) and asked if I was interested in seabirds. It was Alec MacCall, a long-time PSG member interested in seabird-fisheries interactions! He was on his way to an International Whaling Commission meeting in Tokyo. For much of our journey, we talked about seabirds in Japan and North America. We discussed the apparent similarity of the general habitat, oceanography, islands, climate and proximity to dense human populations of the Izu Islands for Japanese Murrelets compared to the Channel Islands in southern California for Xantus' Murrelets. While this was a wonderful but unusual PSG teleconnection for me, it had happened previously to Alec. In spring 1980, in Pisac, Peru, Alec visited the market in the square and ran into David Ainley and Joe Jehl on their way back from Antarctica.

We arrived at the Narita airport about 1415 hours, after losing a day by crossing the dateline. The 17 hour time difference was already evident as I stood in line to pass through customs. All they wanted to know was my address in Tokyo. I finally walked through the sliding doors expecting to walk into a scene from Blade Runner but instead found an orderly, half-filled lobby. There's the Tourist Information Center. There's Leah! With the biggest smile in the world! Neither of us could believe that it was all true! Then, she sprang into organization mode, phoning her friend Per Kjellberg, with whom we would be staying. Per worked for a Swedish trading company and had been in Japan for three and a half years. We would rendezvous at the Hotel Okura which we could reach by shuttle bus from the airport ($2,900 Yen; $108 Yen/$1 US). I was impressed with my first cold coffee drink from a vending machine in the airport—quite a zing.

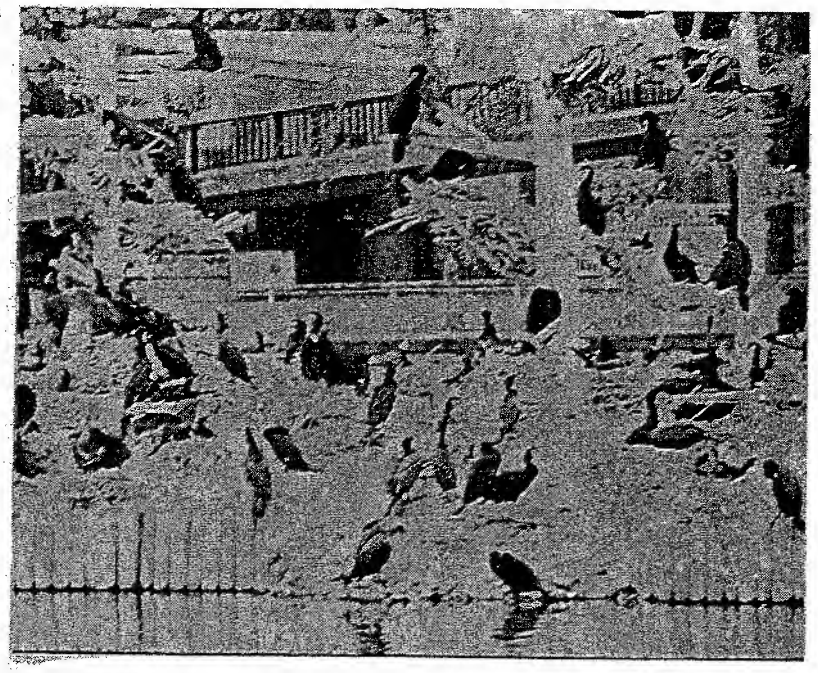
I don't know why I didn't know that they drive on the left hand side of the road in Japan. The countryside was hard to pick out from the freeway and the built-up areas that increased all the way into Tokyo. Our first bird was a Jungle Crow. What a bill! The buildings became interspersed with industrial smoke stacks and eventually crowded apartment complexes. We passed over several bridges from which we could see Tokyo Bay in the distance and many freighters at anchor. The roads became more tangled—a freeway nightmare—until we wound right past the Imperial Palace and into "downtown" areas. Few buildings were over ten stories, but they were densely packed. Skyscrapers were few because of earthquakes and old buildings were largely absent due to World War II bombing and reconstruction. Per met us at the Okura Hotel and we strode off into the massive subway system. If I wasn't lost earlier, I was certainly at Leah and Per's mercy now. All the instructions were in Japanese symbols, so I followed closely. We waited for several trains to go by because they were too full, but I was informed that they were "really full" during the morning rush hour. Everyone had to be at work by 0900 hours by tradition. Everyone was well dressed. The ride was quick and efficient, although we switched trains several times (about $300 Yen per section). By the time we emerged from the subway, it was beginning to become dark and we were in more neighborhood surroundings. We strolled by yakatori/sushi house fronts, other vendors ,and the many outside vending machines especially for cigarettes. I was amused at the "Japlish" (Japanized-English) on various signs. We walked to Per's apartment, a comfortable two-bedroom flat with a large living room and kitchen area, After unloading our gear, our only thought was sushi!

We walked for 10-15 blocks to a neighborhood full of restaurants, gambling halls, and shops. The streets were packed. The gambling halls were like those in Reno except that they used standup pinball where only fate determined if you won or lost. A huge cigarette and drinks counter stretched along the back wall and smoke filled the upper half of the air space. We relaxed into the small bamboo chairs in our selected sushi house. The standup sushi picture cards were similar to California sushi places and the sushi was excellent. Our appetizers were small bowls of fresh squid dipped in soy sauce and wasabi. The miso soup was delicious with shrimp heads. Total dinner costs were $7,000 Yen. After dinner, we went to the grocery store. Very western in design but expensive. A single large strawberry was about $100 Yen, a cantaloupe $4,000 Yen. The few items we bought came to about $5,000 Yen. Sleep overcame us as we reached home at 2145 hours.

21 April 1993

This morning, after coffee and toast, Leah arranged our next few days. We would meet with Dr. Higuchi tomorrow (22 April) and would leave that night for the Izu Islands. Today, we would visit Ueno Park. Leaving the subway, I was struck by the first and only homeless people I saw on the whole trip. Our first stop was the Great Cormorant artificial nesting islands in a large lagoon in the park (see photograph). Trees had initially been planted on these islands for "beautification" purposes. Then they were invaded by cormorants who killed the trees with their guano. Now, boards have been attached to help support the dead trees to prevent their collapse. The birds nest from December to May. Other birds in the ponds included Japanese Cormo-

rants, Little Grebes, Pintails, European Widgeon, Pochard, and Tufted Duck. A variety of domestic and exotic birds were in cages, including our first Black-tailed Gulls. We looked up Michio Fukuda who is on staff at Ueno Park and has studied cormorants for 20 years. I had met him at a recent Colonial Waterbird Group Meeting where he presented a poster on male-male pairing in cormorants. We talked about PSG and seabird research in Japan and gave him a package of PSG materials. He told us of the Japan Seabird Group which periodically holds meetings and mentioned many researchers. In particular, he mentioned Mr. Ono who had been working for some time on Japanese Murrelets with Mr. Nakamura.



Since it was now late afternoon, Leah showed me a bit of the Tokyo scene. We left Ueno Park and took the subway to the Sensoji Temple. Incense wafted from kiosks as we approached the huge pagodas and giant wooden-carved man/beast. We threw money in a box for good luck. We wandered through the many booths and into a department store where, in the basement area, there was a fantastic selection of fresh and packaged food. It was like a farmers' market trying tasters of this and that. Then we took the subway to another area of Tokyo where we went to a bookstore that was closed. Instead, we wandered through some fashionable clothing stores. Western styles were definitely "in." The neon was blinding. Finally, we arrived at Per's subway station. We stopped at a Yakatori bar for beer and kani (whole crab; $4,000 Yen), then continued on to another small restaurant where we had ramen noodles and various fish and vegetables. We were completely tired out by the time we made it back home. Jet lag was still with us. The subway had cost about $15 US today.

22 April 1993

Coffee and toast were again good friends this morning. We repacked our clothes and equipment to reduce our gear for our trip to the Izu Islands. We were loaded down as we slugged our way to the subway. Leah with her pack was twice as tall as without. The subway was difficult with such baggage and, in fact, it is not usually proper to travel on it with so much baggage because of space limitations. We used a FAXed map from Dr. Higuchi to navigate to the office of the WBSJ. There are two WBSJ offices, one for public education and one for research where Dr. Higuchi worked. We went up to the fourth floor of the six-story building. As we emerged from the elevator, we immediately tried but could not fit into the crowded office. We left our packs outside and were greeted by Dr. Higuchi. He is charming, well-groomed, and speaks excellent English. He mainly studies Japanese Cranes, although he also works on a great variety of birds, including seabirds. We were introduced to other biologists in the office, including Yutaka Kanai, Tsuyoshi Fujita, Toshiko Kaneko, Mutsuyuki Ueta, and Jason Minton. Mr. Ueta would be accompanying us to the Izu Islands along with Dr. M. Hasegawa, who would join us later. Jason Minton was from Willets, California, only a few miles from where I live! He had been working with the WBSJ for many months, helping in particular with translations.

After introductions and brief discussions, six of us left for lunch. We were seated at their regular table and had a great rice with ground meat and vegetable dish. Miso soup of course. Dr. Higuchi offered to cover lunch, which seemed like a traditional way to get comfortable, as we began to unravel PSG interests and goals in seabird research and conservation. While we walked back to the office, we had a chance to share a few minutes with Dr. Higuchi. He lamented the declines of alcids in Japan (including the Spectacled Guillemot) and the difficulties of doing something. Leah and I echoed our similar problems on the west coast of North America and Alaska.

Back at the office, we underwent the traditional exchange of business cards. Then we pulled out and went through the PSG package of information, explaining further

about PSG and its goals and hopes for future cooperation with the WBSJ and other seabird researchers in Japan. Dr. Higuchi and Mr. Ueta loved their PSG T-shirts. We went on to discuss the status and research needs of the Japanese Murrelet partly in preparation for our trip. Dr. Higuchi pulled out a file of literature on murrelets. There were several Japanese references of which I was not aware. Was this massive language barrier the essence of our difficulty in understanding what the status of this species? Or were studies as limited as it seemed? We spent at least two hours looking up the locations of colonies. We couldn't help discussing the need for a Catalog of Japanese Seabird Colonies. We also spent some time talking about Marbled Murrelets. We looked at maps of old-growth forest cover and the limited literature reporting sightings at sea. Hokkaido seemed to be the only part of Japan where they still may nest, given the widespread loss of old-growth forests. Dr. Higuchi was very interested in efforts in North America to study and conserve this species. We told him about how one can hear and see birds at and before dawn flying over inland nesting areas and that this was a chief method of studying them that had only been realized recently. We also enjoyed visiting with Jason through the day. He was very kind to bring us several cups of tea.

Dr. Yutaka Watanuki came to the office to visit with us at about 1800 hours. He has worked extensively in Antarctica and knew other researchers there like Wayne Trivelpiece and David Ainley. He also spoke English well. He is knowledgeable about Hokkaido where he went to university. He has two students at Tueri Island studying Japanese Cormorants and Rhinoceros Auklets. He thought that only a few Marbled Murrelets may nest in Hokkaido. Few or none were seen from tourist/bird watching trips in several areas. We gave him a package of PSG materials. It was very pleasant meeting him.

We (Higuchi, Ueta, Minton, de Forest, Carter) left at 1900-1930 hours for dinner. It was raining now as it had been for most of the afternoon. Fortunately, there was a large supply of umbrellas at the WBSJ office ,although we looked odd covering our packs and gear as we walked. We were again treated to dinner by the WBSJ: wonderful giant shrimp tempura, miso, and other dishes. Now we toasted to a wonderful trip. This was our first chance to spend time with Mr. Ueta, who had been busily packing all day at the office. His English was broken but his shy smiles were everywhere. I wondered how well we would be able to communicate. Jason, however, seemed very at ease with these people, and he helped us all get to know each other on a very personal level.

We shook hands and said good-bye to Dr. Higuchi and Jason. It was now time to head to the ferry on the subway. We again took up too much space on the subway and had to carry too much gear as we walked many blocks from the subway to the ferry terminal. We went to buy our tickets but were waved away by Mr. Ueta who said that the WBSJ would cover the cost ($4,710 Yen/Person). Then we met Dr. Masami Hasegawa, our fourth. He was very courteous and spoke excellent English. We found out that his research was on snakes on the Izu Islands. He worked for the Chiba Natural History Museum and Institute. As we waited, we looked for Jack Moyer. Dr. Higuchi had tried to contact him earlier in the day but he was en route back to Miyameshima, where he lives and works, on a different ferry. I had read Moyer's papers (published in English in the 1950's) on Japanese Murrelets about 13 years ago. His papers had been the first to spark my interest in Japanese Murrelets. Gus van Vliet had also suggested that we contact him since Gus had uncovered some of Moyer's old notes on other colonies. With ten minutes before leaving, we spotted Moyer on the phone having a long conversation. We stood nearby and finally had a few moments to talk. He encouraged us to consider coming to Miyakejima, where he has been involved in setting up a visitors center and has been encouraging tourism from the global environmental community. He regretted having collected some murrelets for Bob Storer at the University of Michigan. I said that his work had helped to highlight the plight of the Japanese Murrelet and to bring the concern of PSG and others to Japan. But we had to go. We clambered onto the ferry and down to the E level (i.e. the bowels of the large ferry ship). Each of the lower floors were set up simply as carpeted rooms. No furniture. And the carpets were covered with sleeping and soon to be sleeping people and their gear. Noncarpeted walkways through the rooms were piled high with shoes of every kind. We took off our shoes and piled our packs and bags against the wall. After getting a few beers from the vending machine jungle, we settled down to talk about the Izu Islands and the work we would do. Dr. Hasegawa was very knowledgeable and had been working in the islands for at least 10-15 years. When he indicated how large the snakes were and that they eat murrelet eggs, we were amazed. Hasegawa also loved his PSG T-shirt. We settled in to sleep, knowing that in a few hours we would in the home of the Japanese Murrelet.

(Continued in Parts II (includes visit to the Izu islands and nesting colonies of the Japanese Murrelet) and III (return to Tokyo and North America and continued efforts) in future PSG Bulletins.)

Technical Notes

SEABIRD WRECK IN BOUNDARY BAY

Gary W. Kaiser, Canadian Wildlife Service, P.O. Box 340, Delta, British Columbia V4K 3Y3.

Beginning on 14 August, there were numerous reports from naturalists and other members of the public regarding disturbingly large numbers of seabirds on the shore of Boundary Bay. Single dead birds are not uncommon along the bay because the prevailing winds drive ashore any floating material. The initial reports implied that this was an unusually large wreck of birds and we decided to conduct a more formal survey. On 17 August, Canadian Wildlife Service (CWS) staff counted 250 birds between 72 St. and 104 St. in Delta (6.7 km). Allan Poynter and the naturalists who conduct the monthly beached-bird survey reported another 321 from the tip of Point Roberts to 72 St from their survey on 18 August (9.4 km). The birds were heavily wrapped in loose eel grass and other detritus which made them difficult to find and many may have been missed. Within a week, groups of 50 to 100 birds were being found by regional district parks staff on Wreck Beach, Vancouver and Iona Island, Richmond and by employees of the Boundary Health Unit on the recreational beaches of White Rock at the west end of Boundary Bay. In all more than 800 birds were counted in Boundary Bay and about 300 more were reported between Roberts Bank and Wreck Beach (Table 1).

During the surveys of 17 and 18 August, all beached murres were spray painted when found to avoid double-counting. Six days later, 191 beached murres were found between 72 St. and 88 St., Delta. Sixty percent were unmarked. The frequency of new birds washing-up declined until the end of August but 50 to 100 murres washed up at White Rock on 5 September and a several dozen were reported from parts of Boundary Bay and Point Roberts.

Adult Common Murres made up 90% of the birds washed ashore in Boundary Bay. About half were moulting their wing feathers. The remainder consisted of fledling Rhinoceros Auklets (5%), and a few scoters and gulls. Two juvenile Marbled Murrelets were also found. Between 25 and 30% of the murres and all of the Rhinoceros Auklets collected on 17 August, showed slight abrasions on the patagial tendon of the wing, contusions in the skin of the legs, or bloody congestion in the face and eyes. The remaining birds were in too advanced a state of decomposition for effective examination. Both of the juvenile Marbled Murrelets were badly decomposed and no cause of death could be determined.

Since 1978, CWS staff, working in Boundary Bay, have observed occasional influxes of 50 to 100 dead murres in August. However, the numbers were never large enough to cause concern and the dead birds included many newly-fledged young that often die in large numbers from natural causes (Bayer *et al.* 1991). The current kill involves only adult murres and is exceptionally large. Its timing and the marks on some of the birds are identical to a smaller event that happened in 1992. At that time, about 200 freshly killed murres washed up on the beaches of White Rock and a sample was collected and examined at the veterinary pathology laboratory of the British Columbia Ministry of Agriculture in Abbotsford. All of those birds were drowned and most showed damage attributable to entanglement in nets.

The only suspected source of large-scale adult seabird mortality, that occurs every August, is the net fishery for salmon in U.S. waters off Point Roberts and the nearby San Juan Islands. The Canadian gill-net fishery mostly occurs too far west to deposit murres in Boundary Bay or is actually within the Fraser River, beyond the range of murres. Birds caught in the U.S. fishery would wash into the bay because of the prevailing winds. The San Juan Islands fishery has been recognized as a significant source of seabird and marine mammal mortality for many years (Angell and Balcomb 1982, Speich and Wahl 1989). Troutman *et al.* (1991) have recently attempted to quantify the risk faced by seabirds in northern Puget Sound. Anderson (1993) has assessed the risk posed by seine nets and found that many birds can escape entrapment in that kind of gear.

A combination of factors raises the significance of this particular kill as a conservation issue. Earlier events had been cautiously accepted as a small loss from a large population. The current rate of loss raises serious concern for population consequences. Common Murres, like most alcids, lay only one egg per year, tolerate a very high rate of mortality among their young, but live many years. In effect they balance a long life with numerous opportunities to replace themselves once they learn to survive in the oceanic environment against low fecundity. This strategy appears to have failed in Washington and the population has not risen from 3-5 thousand pairs since 1983:

1. There has been a long series of El Niño events since 1983 that have prevented the population from breeding and recovering the 1978 levels reported by Speich and Wahl (1989).

2. The *Nestucca* (December 1988 - January 1989) and *Tenyo Maru* (July 1991) oil spills killed some 50,000

murres. Most of those likely came from this same breeding population (Burger 1993, Parrish 1993).

3. A tally of more than 800 dead murres in the west half of Boundary Bay, implies a much larger kill. Birds are hard to find in beach detritus; the eastern half of the bay was not surveyed; and many birds may not have come ashore.

The available evidence supports the conclusion that the wreck of seabirds in Boundary Bay was not a natural event. The murres and auklets were killed by drowning when they became entangled in fish nets in U.S. territorial waters and washed ashore in Canada because of the prevailing southerly winds.

There are two courses of action that might reduce the bycatch of birds: change the gill-nets or change the way gill-nets are used. There is a tenuous chain of circumstantial evidence in Canada that monofilament gill-nets are more hazardous to birds than multi-strand nets. Monofilaments were recognized as a major cause of mortality in non-target species off Newfoundland, in the high-seas fisheries, and in California (Nettleship *et al.* 1984). Prior to 1984, there had been occasional catches of very large numbers of Ancient Murrelets in gill nets near Langara Island (C. Bellis pers. comm.) as well as the kill of Marbled Murrelets in Barkley Sound (Carter and Sealy 1984). No significant fishery-related kills of seabirds has been reported in British Columbia since 1984. In that year, the Canadian Pacific fishery switched from monofilament to a multi-strand net.

Commercial gill-netters in British Columbia (L. Prestash, F. Downey, L.S. Forbes, C. Bellis pers. comms.), consulted during the preparation of the Marbled Murrelet Recovery Plan, reported small but regular numbers of birds killed each year in the multi-strand nets. Typical kills vary between 3 and 12 per season but can occasionally reach that number in a single set. A low rate of capture can still have significant impact. Carter and Sealy (1984) estimated that gill-netters killed Marbled Murrelets in Barkley Sound at a rate of 5 birds per year per boat. The total was still 380 murrelets or 7.8% of the estimated post-breeding flock. They concluded that only the separation of gill-nets and birds could reduce the problem. Applying that standard to the San Juan Islands, would eliminate most of the gill-net fishery in the open waters of northern Puget Sound and the Strait of Juan de Fuca. The economic impact of such a recommendation will require a clear demonstration that the action is required and will be effective.

ACKNOWLEDGEMENTS: Allan Poynter, Rick Swanston, and other naturalists provided valuable information on the Point Roberts-Tsawassen area. David Nysewander and John Engbring helped with information on the birds and fishery in Washington.

LITERATURE CITED:

Anderson, J.D. 1993. Seabird interactions in Puget Sound Purse-seine fisheries (abstract). Pacific Seabird Group Bull. 20:48.

Angell, T. and K.C. Balcomb. 1982. Marine birds and mammals of Puget Sound. Washington Seagrant Program, U. Washington Press, Seattle, Washington. 145 pp.

Bayer, R.D., R.W. Lowe, and R.E. Loeffel. 1991. Persistent summer mortalities of Common Murres along the Oregon central coast. Condor 91:516-525.

Carter, H.R. and S.G. Sealy. 1984. Marbled Murrelet mortality due to gillnet fishery in Barkley Sound, British Columbia. *in* D.N. Nettleship, G.A. Sanger, and P.F. Springer (eds.). Marine birds: their feeding ecology and commercial fisheries relationships. Canadian Wildlife Service Spec. Publ., Ottawa, Ont. 212-220.

Nettleship, D.N., G.A. Sanger, and P.F. Springer (eds.). 1984. Marine birds: their feeding ecology and commercial fisheries relationships. Canadian Wildlife Service Spec. Publ., Ottawa, Ont. 220 pp.

Parrish, J.K. 1993. Factors affecting colony attendance and reproductive success of Common Murres (*Uria aalge*) on Tatoosh Island, Washington (abstract). Pacific Seabird Group Bull. 20:49-50.

Speich, S.M. and T.R. Wahl. 1989. Catalog of Washington seabird colonies. U.S. Fish and Wildlife Service Biological Report 88(6), Washington, D.C. 510 pp.

Troutman, B.L., S.J. Jeffries, and T.A. Young. 1991. Identification of areas for potential seabird mortality in the commercial salmon gill net and purse seine fisheries of the Strait of Juan de Fuca and northern Puget Sound. Washington Department of Wildlife, Olympia. 26pp.

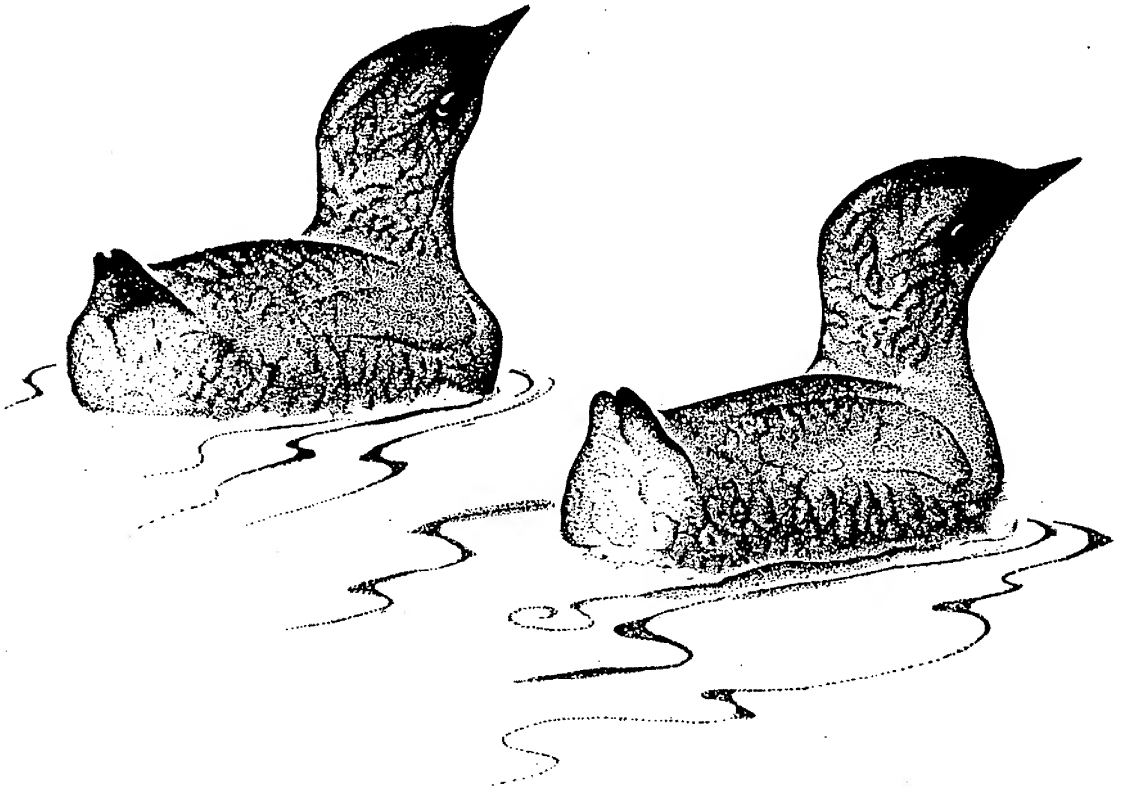
Technical Notes

Table 1. Observations of birds washed ashore on the Lower Mainland of British Columbia in August 1993.

Species	Stretch of Shoreline Surveyed		
	Point Roberts north to 72 St. in Delta, B.C.	72 St. to 104 St. Delta, B.C.	
	18 Aug.	17 Aug.	23 Aug. *
Common Murre	287	217	112 **
Rhinoceros Auklet	15	21	5
Marbled Murrelet	0	1	1
Pigeon Guillemot	3	0	0
Common Loon	1	0	2
Scoters	10	1	2
Gulls	5	10	6
Total	321	250	128

* Count of newly arrived birds only.

** Common Murres were also reported from Roberts Bank Superport causeway - 79 on 25 Aug., Wreck Beach and Iona Island - "50 to 100 each about 20 Aug.", White Rock - "100 to 200 on the beach" on 22 Aug.Table 1. Observations of birds washed ashore on the Lower Mainland of British Columbia in August 1993.



FIRST RECORD OF NESTING ACTIVITY BY A LESSER BLACK-BACKED GULL (*Larus fuscus*) IN NORTH AMERICA.

Gus van Vliet, P.O. Box 210442, Auke Bay, AK 99821, Bob Marshall, P.O. Box 211461, Auke Bay, AK 99821, Deborah Craig, P.O. Box 20578, Juneau, AK 99802, and Joanna Egolf, Alaska Nature Tours, P.O. Box 491, Haines, AK 99827

The Lesser Black-backed Gull (*Larus fuscus*) breeds along the coasts of Iceland, British Isles, Scandinavia, northwest Russia, south to the Iberian Peninsula, and rarely to Greenland (Evans, 1984; Barret and Vader, 1984; Golovkin, 1984). Despite numerous observations of this species from eastern North America during the past thirty years (P.W. Post, pers. comm.), there are as yet no documented records of nesting activity.

On 12 June 1993, within a small (possibly less than 35 pair total) mixed Herring (*L. argentatus*) and Glaucous-winged (*L. glaucescens)* Gull colony located 15 km northwest of Juneau, Alaska, we discovered an adult Lesser Black-backed Gull (*graelsi* race) consorting with an adult Herring Gull and sitting on a nest containing two eggs. The nest was built from moss and was situated on a small ridge, 0.5 km from the face of the Mendenhall Glacier and the shoreline of Mendenhall Lake. Only a few small (< 5 m) alder and cottonwood saplings were near the nest, reflecting the open, early-successional nature of the vegetation of this recently (during the past 35 years) deglaciated rocky ridge.

We revisited the nest-site on 25 July 1993 and observed egg shell fragments and dried egg shell membranes near the nest, along with both members of the breeding pair. However, we were unable to locate any evidence of young birds at or near the nest. Three days prior, an adult and a subadult Bald Eagle (*Haliaetus leucocephalus*) were observed flying and sitting within the gull colony and they may have disrupted the breeding attempt by the pair. Of all the gulls at the colony, the Lesser Black-backed Gull appeared to be the most active harasser of the Bald Eagles.

Based on a photographic evaluation of wing-pattern, this Lesser Black-backed Gull is thought to be the same bird observed during the summers of 1991-1993 participating in mixed-species feeding flocks on Auke Bay, 10 km away from the breeding colony (Tobish and Isleib, 1993).

As the majority of records for the Lesser Black-backed Gull in North America are from eastern United States and Canada, it is suprising that the first record of nesting activity for North America by this species should come from Alaska. Only three prior records of the Lesser Black-backed Gull exist for the state, including another Juneau bird collected in 1990 (Gibson and Kessel, 1992).

Literature Cited:

Barcena, F., A.M. Teixeira, and A. Bermejo. 1984. Breeding seabird populations in the Atlantic sector of the Iberian Peninsula. Pages 335-345 in Croxall, J.P.; Evans, P.G.H.; Schreiber, R.W. (eds.), Status and conservation of the world's seabirds. Int. Counc. Bird Preserv. Tech. Publ. 2. Cambridge, U.K.

Barrett, R.T. and W. Vader. 1984. The status and conservation of breeding seabirds in Norway. Pages 323-333 in Croxall, J.P.; Evans, P.G.H.; Schreiber, R.W. (eds.), Status and conservation of the world's seabirds. Int. Counc. Bird Preserv. Tech. Publ. 2. Cambridge, U.K.

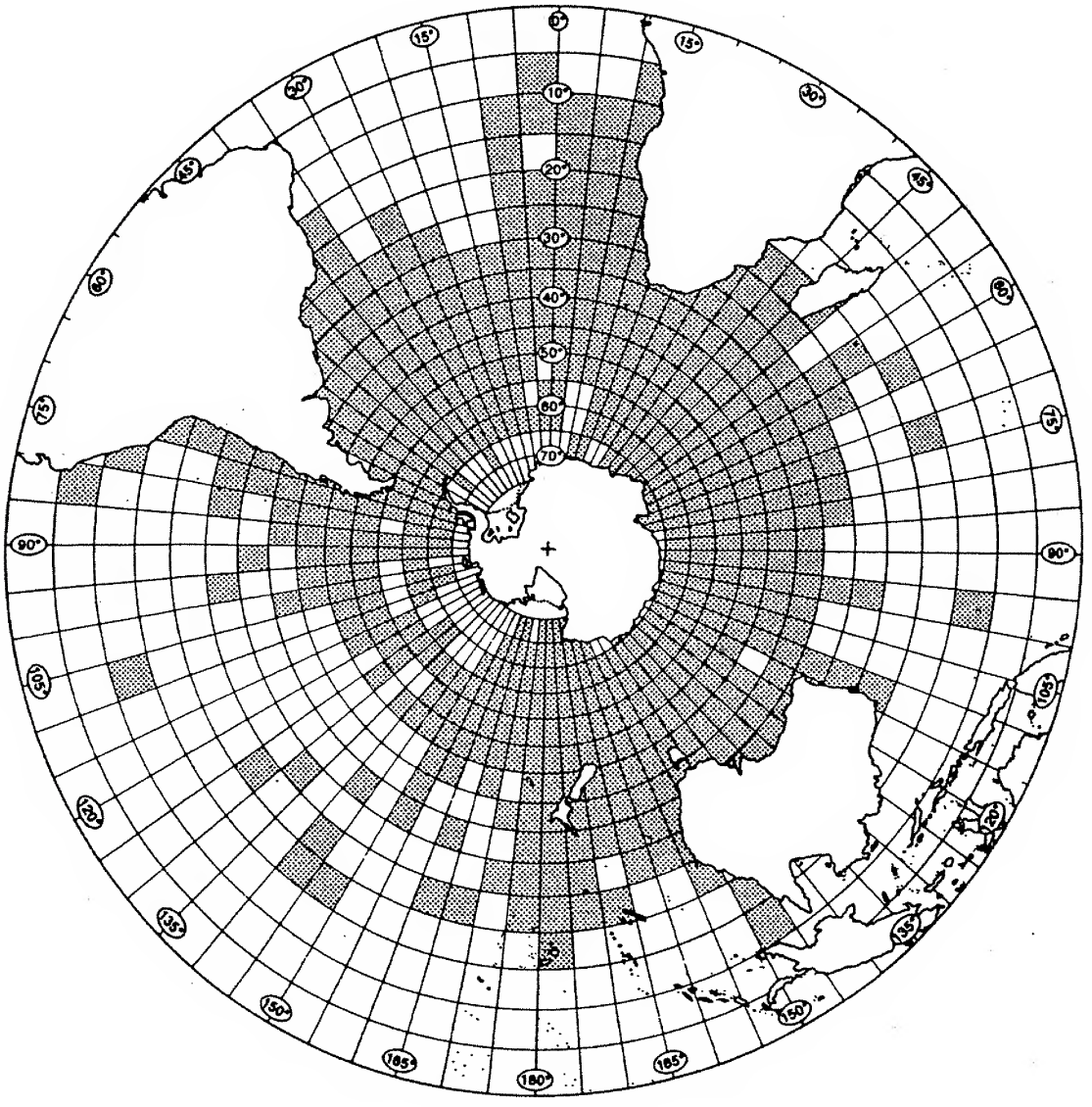
Evans, P.G.H. 1984. Status and conservation of seabirds in northwest Europe (excluding Norway and the USSR). Pages 293-321 in Croxall, J.P.; Evans, P.G.H.; Schreiber, R.W. (eds.), Status and conservation of the world's seabirds. Int. Counc. Bird Preserv. Tech. Publ. 2. Cambridge, U.K.

Gibson, D.D. and B. Kessel. 1992. Seventy-four new avian taxa documented in Alaska 1976-1991. Condor 94:454-467.

Golovkin, A.N. 1984. Seabirds nesting in the USSR: the status and protection of populations. Pages 473-486 in Croxall, J.P.; Evans, P.G.H.; Schreiber, R.W. (eds.), Status and conservation of the world's seabirds. Int. Counc. Bird Preserv. Tech. Publ. 2. Cambridge, U.K.

Tobish, T.G., Jr. and M.E. Isleib. 1993. Alaska Region. American Birds 47:133-136.

ATLAS
of
Southern Hemisphere
ALBATROSSES



Compiled by W.L.N.Tickell

Introduction

The authors of an increasing number of seabird books illustrate species distributions by shading huge expanses of ocean while saying little if anything about the data and assumptions upon which their maps are based. This atlas tries to keep roughly within the constraints of observations.

In the late 1960s I was one of eight seabird workers who shared in bringing together at-sea records for Antarctic Map Folio Series Number 14, published by the American Geographical Society (Watson *et al* 1971).The four albatross maps included in that work have been the starting point of this atlas; although to save space, the sources cited in the Folio have not been listed again here.

The adoption of 5º x 5º 'squares' arose because the Folio maps were ruled at 5º intervals, but recently Barritt (1992) has argued for the effectiveness of the 5º squares in the Marsden reporting grid used by the Royal Navy. Although the areas are large, they are in keeping with the distances albatrosses are known to be capable of flying within a day or so (Kenyon & Rice 1958; Jouventin & Weimerskirch 1990).

Shaded squares are not measures of abundance; they may represent just one observation of a single bird at the fringe of its range or many reports totalling thousands of albatrosses throughout the year.

Planned seabird cruises adopting methods such as those advocated by Tasker *et al* (1984) have been relatively few and to cover the whole of the ocean it is still necessary to incorporate less controlled observations from a wide selection of records going back many years.

The species included in the atlas comprise many separate populations and age classes that may be expected to have characteristic distributions not revealed by pooled data. Sub-specific names exist; but some remain contentious and at-sea reporting of them has been erratic, so for the purposes of this work, all records have been treated as species only.

Before Peter Harrison (1978) described the field characteristics of great albatrosses, many observations purporting to be of Wandering Albatrosses were taken at face value, when in fact, they they may well have been Royals. It has not been possible in retrospect to define criteria for eliminating inadequate identifications and, next to throwing out most of the records of Wanderers from classic ocean voyages, they have been plotted with a caution (Map 2).

The great albatross at Amsterdam Island may be one of several sub-species of Wandering Albatross (Bourne 1989) or a separate species (Jouventin & Roux 1983), but published reports have been too few to justify a separate map.

Until quite recently very few Royal Albatrosses were identified at sea; only six of those plotted in the Folio were from a contemporary observer. The first compilation of Royal Albatrosses observations at sea published by Enticott (1986) is the basis for Map 3.

Title (over): **The Albatross Latitudes:** MAP 1.

All squares in which at least one albatross of any species has been reported.

Black-browed Albatrosses are the most numerous and readily identified of the smaller (mollymawk) albatrosses in the southern hemisphere but some Yellow-nosed and juvenile Grey-head Albatrosses may have been confused with them (Tickell 1969). Buller's Albatrosses have almost certainly been under-represented due to misidentification as Grey-headed Albatrosses. Older Sooty Albatrosses and juveniles with worn plumage are sometimes difficult to distinguish at sea from Light-mantled Sooty Albatrosses (Harrison 1985) and they too may have been under-represented in observations. The *cauta* albatrosses may be species or sub-species; HANZAB has opted for the latter, but at sea almost all are reported as just Shy or White-capped Albatrosses.

Individuals of some southern albatrosses have been seen in the northern hemisphere, but whatever their significance, the maps in this atlas are bounded by the equator and they have not been plotted; selected references have been cited on the maps.

The maps have been compiled by hand and records incorporated up to 30 June 1992. I am aware of data that have not been available to me and there must be records not known to me. All names follow The Handbook of Australian, New Zealand and Antarctic Birds (HANZAB) (Marchant & Higgins 1990). Breeding locations have been indicated by numbered spots whose identity can be found in Table 1. Where observations have been exactly on a line of latitude or longitude the square shaded has been the one to the south or east respectively.

The atlas has been issued as loose sheets to facilitate photocopying and I hope that some will find their way into the hands of seafarers interested enough to write to me with further observations and comments for up-dating the plots.

Acknowledgements

This atlas is dedicated to George Watson; it is a sequel to Antarctic Map Folio No 14 and twenty-one years after its publication I still remember the enthusiasm with which he directed that enterprise from the Smithsonian Institution.

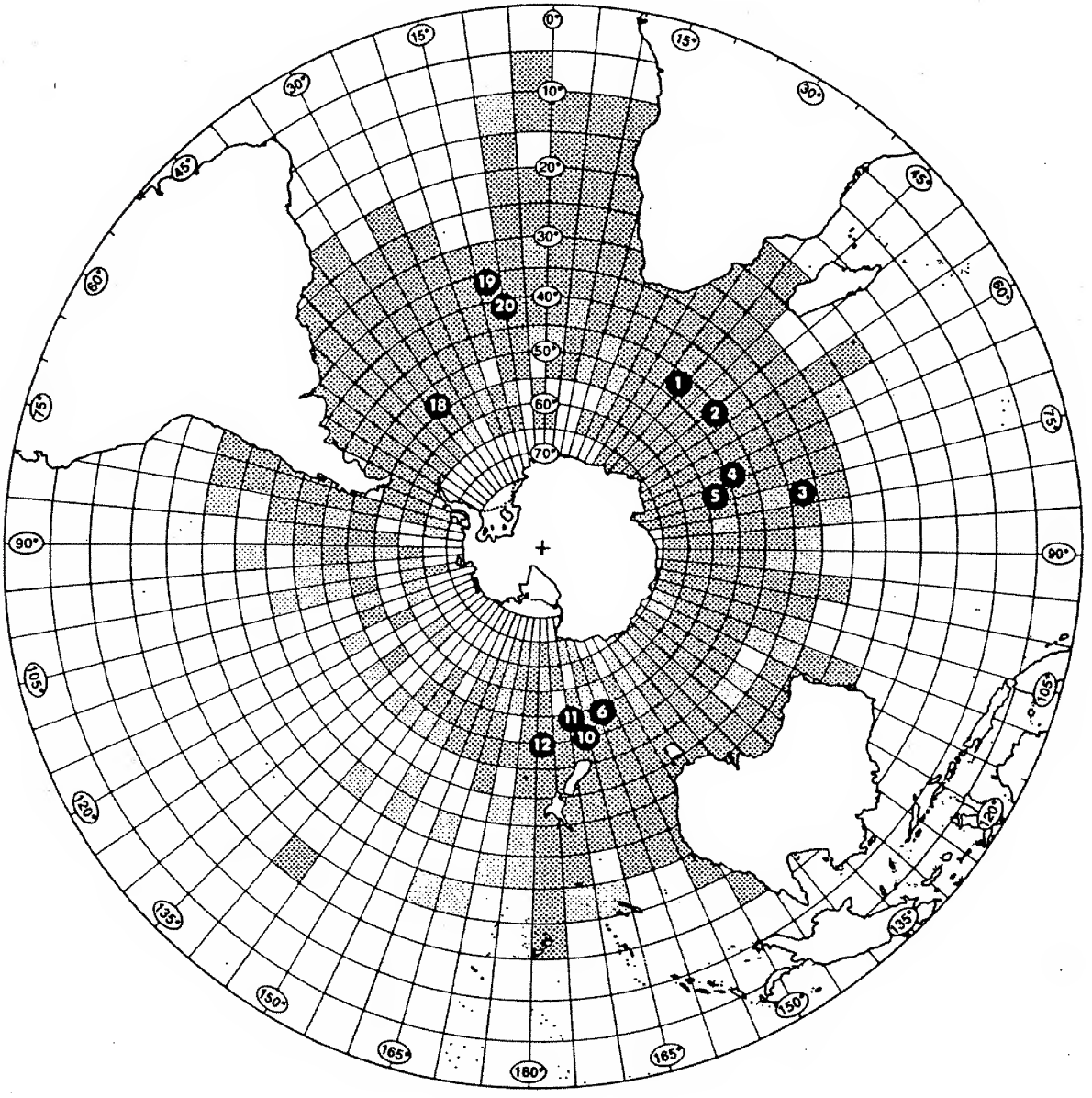
I have to thank the observers, whose names briefly identify thousands of records from many ships that have been incorporated in these maps. Most of them contributed to the unique reporting scheme operated continuously by the Royal Naval Bird Watching Society since the late 1940s; others are on the computer files where data of the First and Second International BIOMASS Experiments (FIBEX and SIBEX) of the early 1980s are stored; P Trethan helped me immensely by supervising print-outs of information from that important database.

The Australian Bird and Bat Banding Scheme, Australian Antarctic Division, British Antarctic Survey, Centre d'Etude Biologiques de Chizé, New South Wales Albatross Study Group, Percy FitzPatrick Institute of African Ornithology, Royal Naval Bird Watching Society and the Bird Biology Sub-Committee of the Scientific Committee for Antarctic Research (SCAR) have all allowed access to unpublished data from their files.

I am grateful to, AJ Bartle, H Battam, WRP Bourne, NP Brothers, MJ Carter, NG Cheshire, J Cooper, JP Croxall, JW Enticott, the late JD Gibson, P Harrison, the late GW Johnstone, KW Lowe, S&J Poncet, PA Prince, JC Sinclair, J Warham, BP Watkins, H Weimerskirch, EJ Woehler, RW Woods and others unnamed who have either provided observations or helped me to gain access to unpublished data. S Godden of the Geography Department at the University of Bristol drew the maps.

WANDERING ALBATROSS
Diomedea exulans

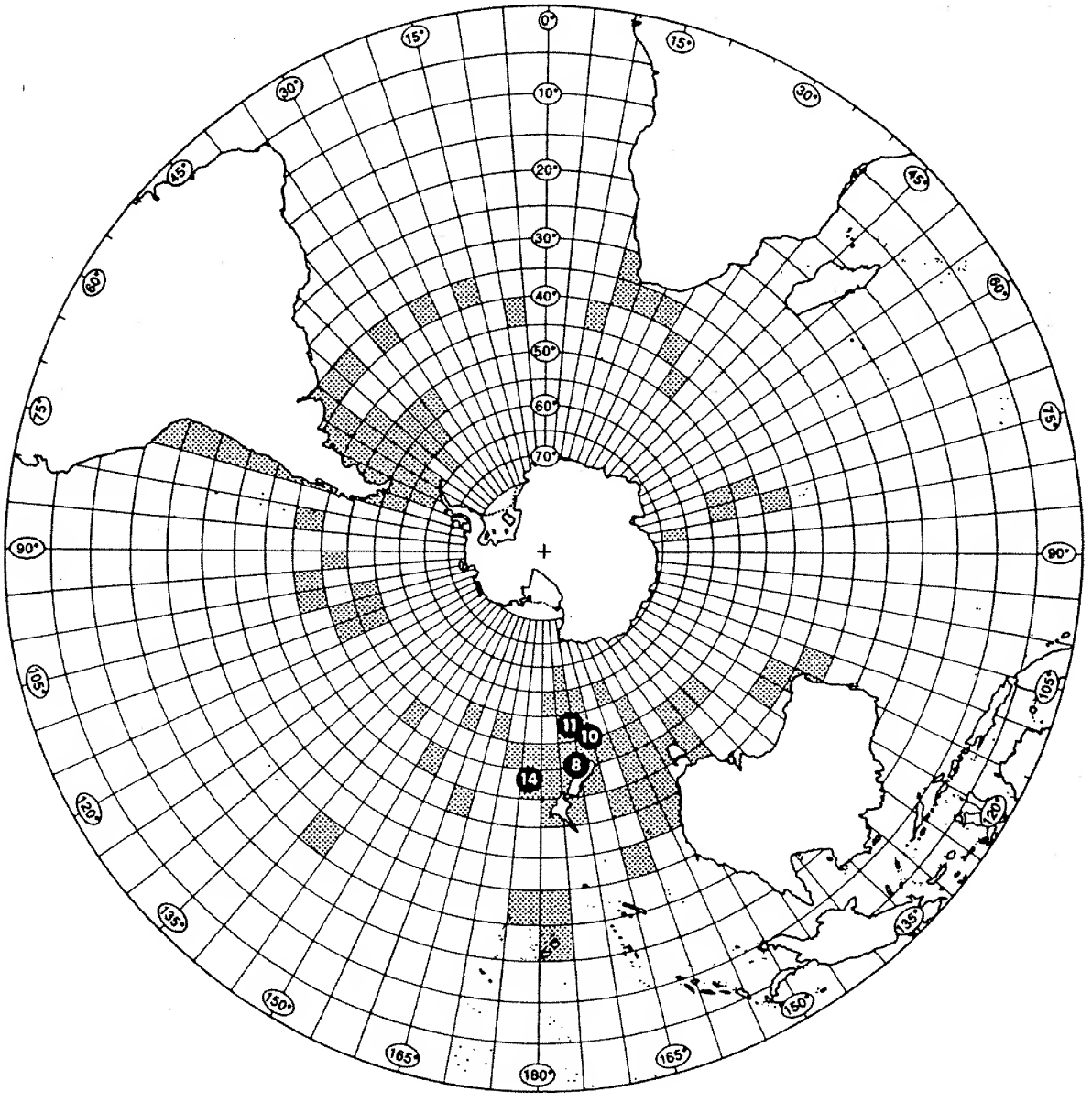
MAP 2.



Lighter shading refers to earlier sightings where observations did not indicate awareness of Royal Albatrosses and therefore the possibility of misidentification; the darker areas are based upon more reliable identifications, mostly made after 1978 and often substantiating earlier records. In 1963 a young Wanderer was seen in the northwest Atlantic off Portugal (RNBWS 1966).

ROYAL ALBATROSS MAP 3.

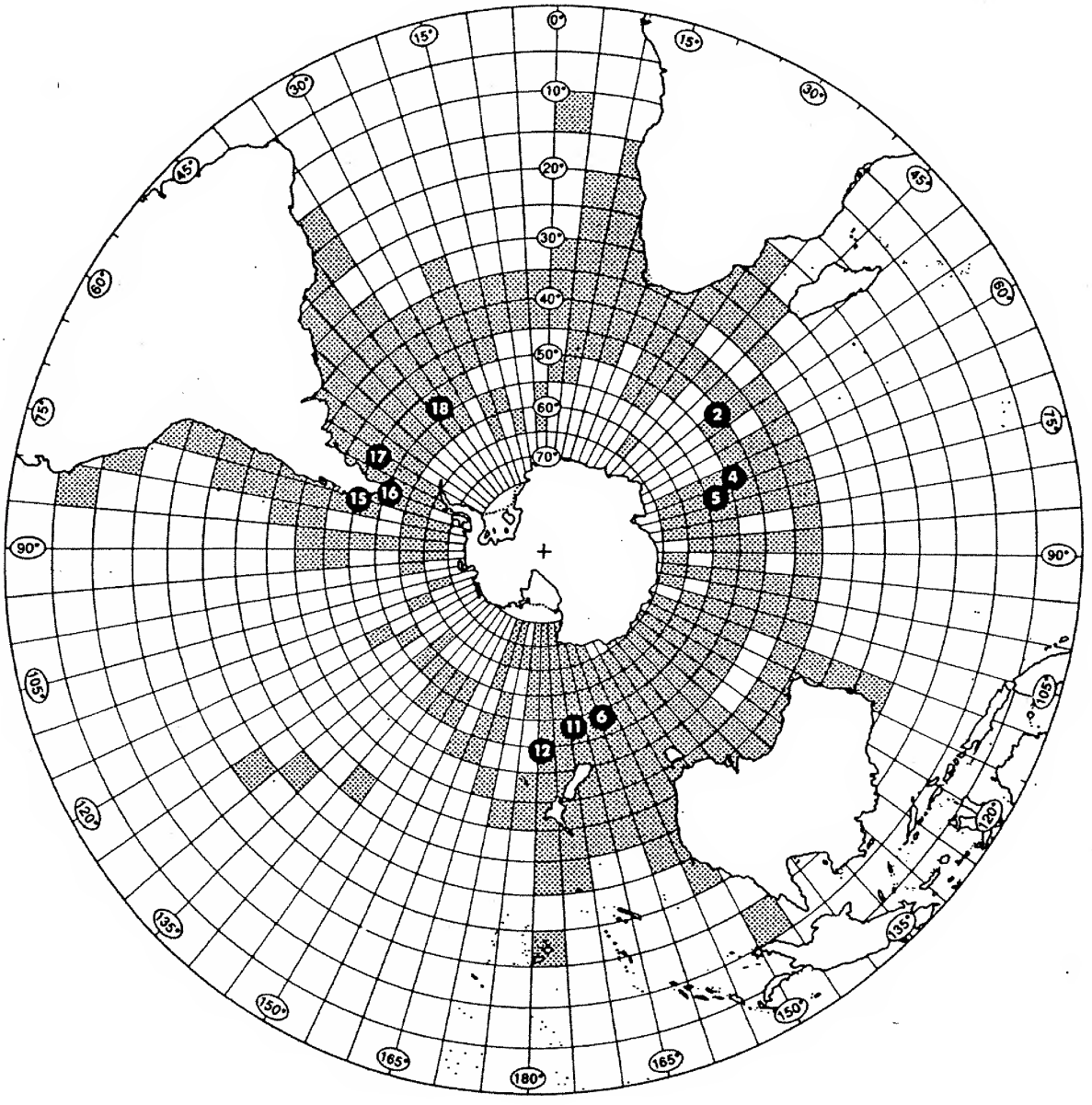
Diomedea epomophora



BLACK-BROWED ALBATROSS

Diomedea melanophrys

MAP 4.

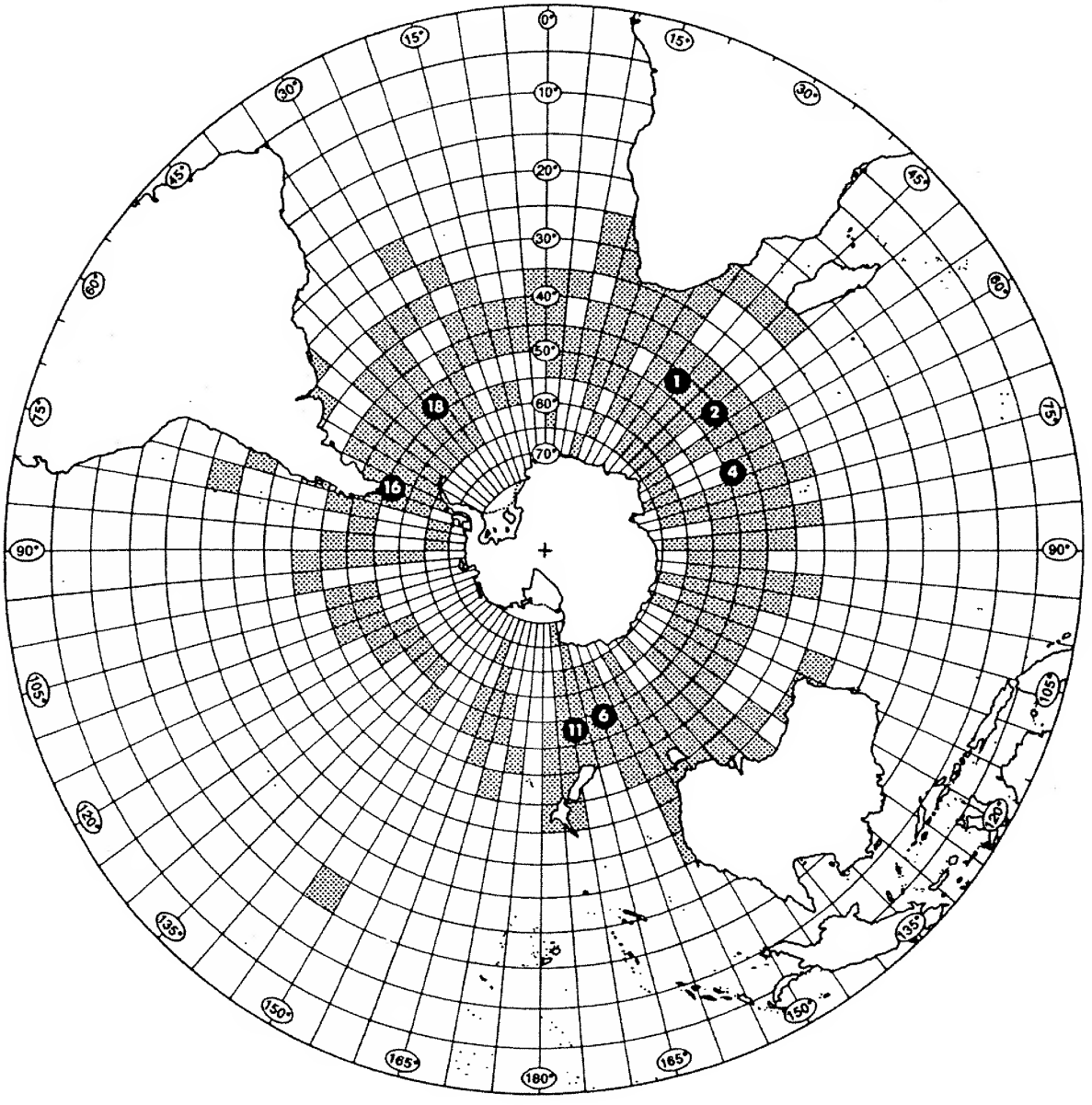


Black-browed Albatrosses are seen from time to time in the north Atlantic and two single birds are known to have taken up residence in separate Gannet colonies to which they returned each (northern) summer for many years (Anderson 1895; Hill 1987).

GREY-HEADED ALBATROSS

MAP 5.

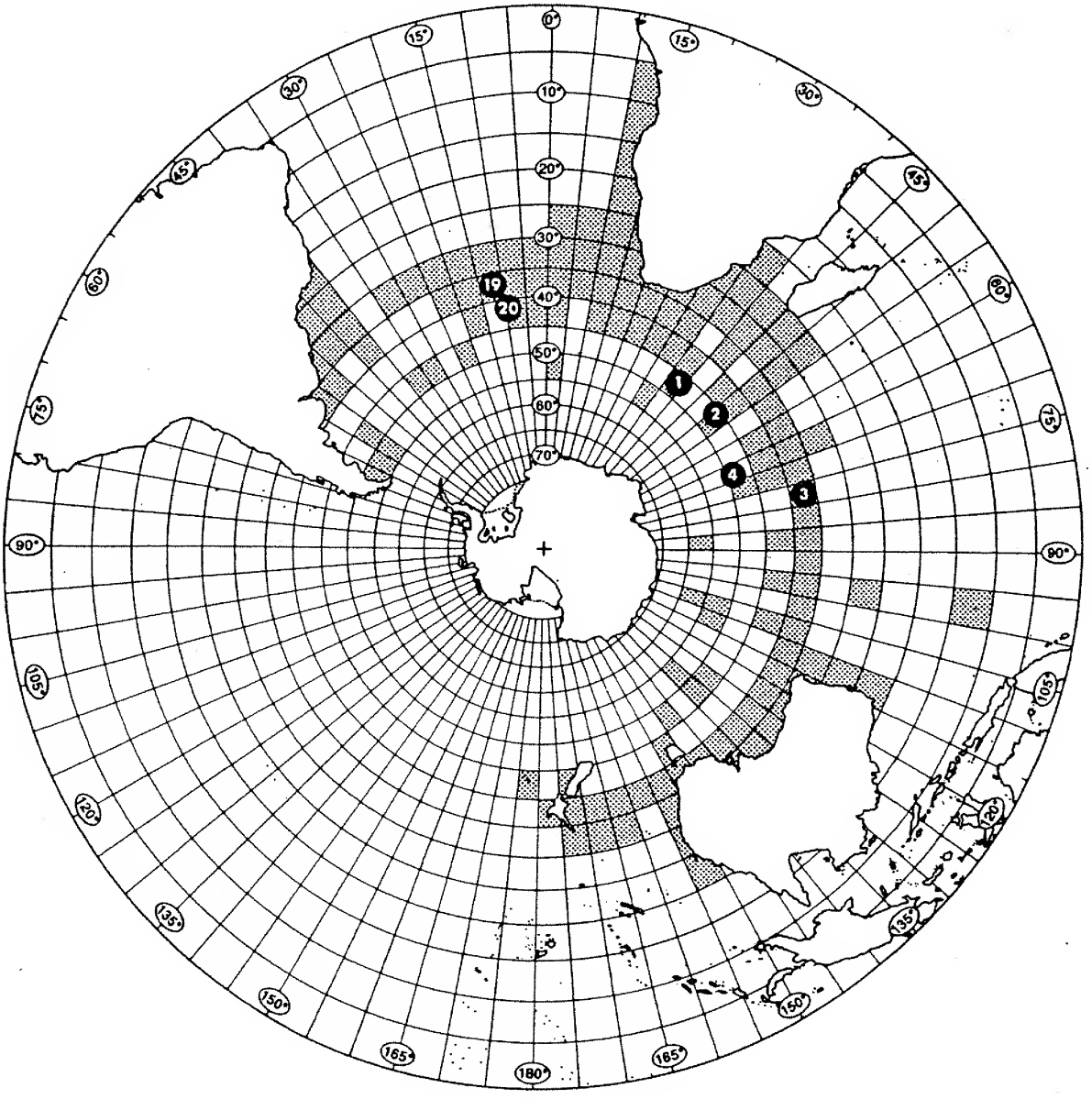
Diomedea chrysostoma



YELLOW-NOSED ALBATROSS

Diomedea chlororhynchos

MAP 6.

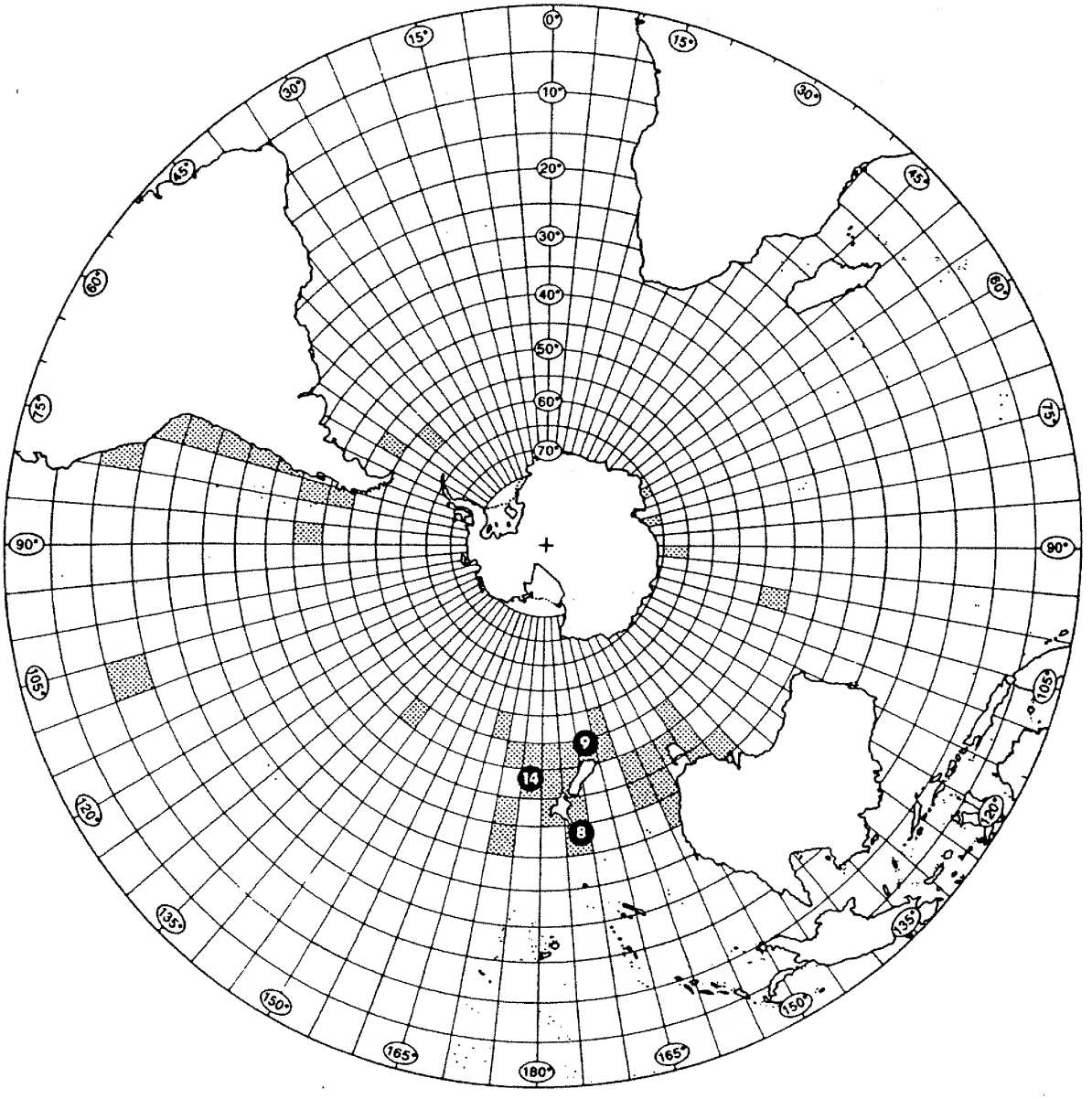


The presence of Yellow-nosed Albatrosses far south needs further confirmation; one report off the Antarctic Peninsula at 64°64'S, 64°99'W (FIBEX 17.2.81) has not been plotted. There is one detailed description of a Yellow-nosed Albatross in the northeast Atlantic Ocean (RNBWS 1987).

BULLER'S ALBATROSS

Diomedea bulleri

MAP 7.

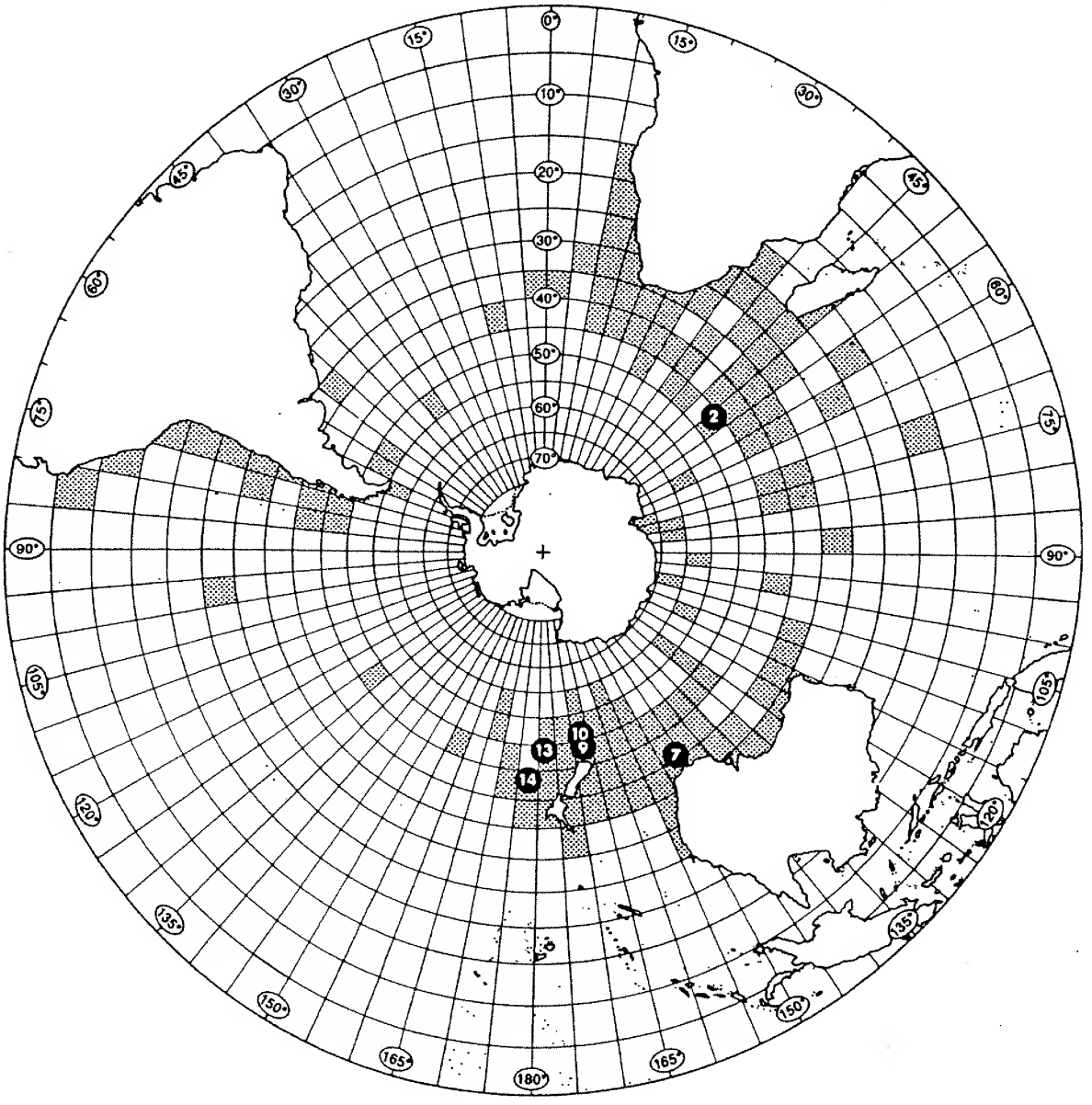


Sightings near the Antarctic are recent (Woehler *et al* 1990) and have been confirmed (Woehler pers comm).

SHY (WHITE-CAPPED) ALBATROSS

MAP 8.

Diomedea cauta

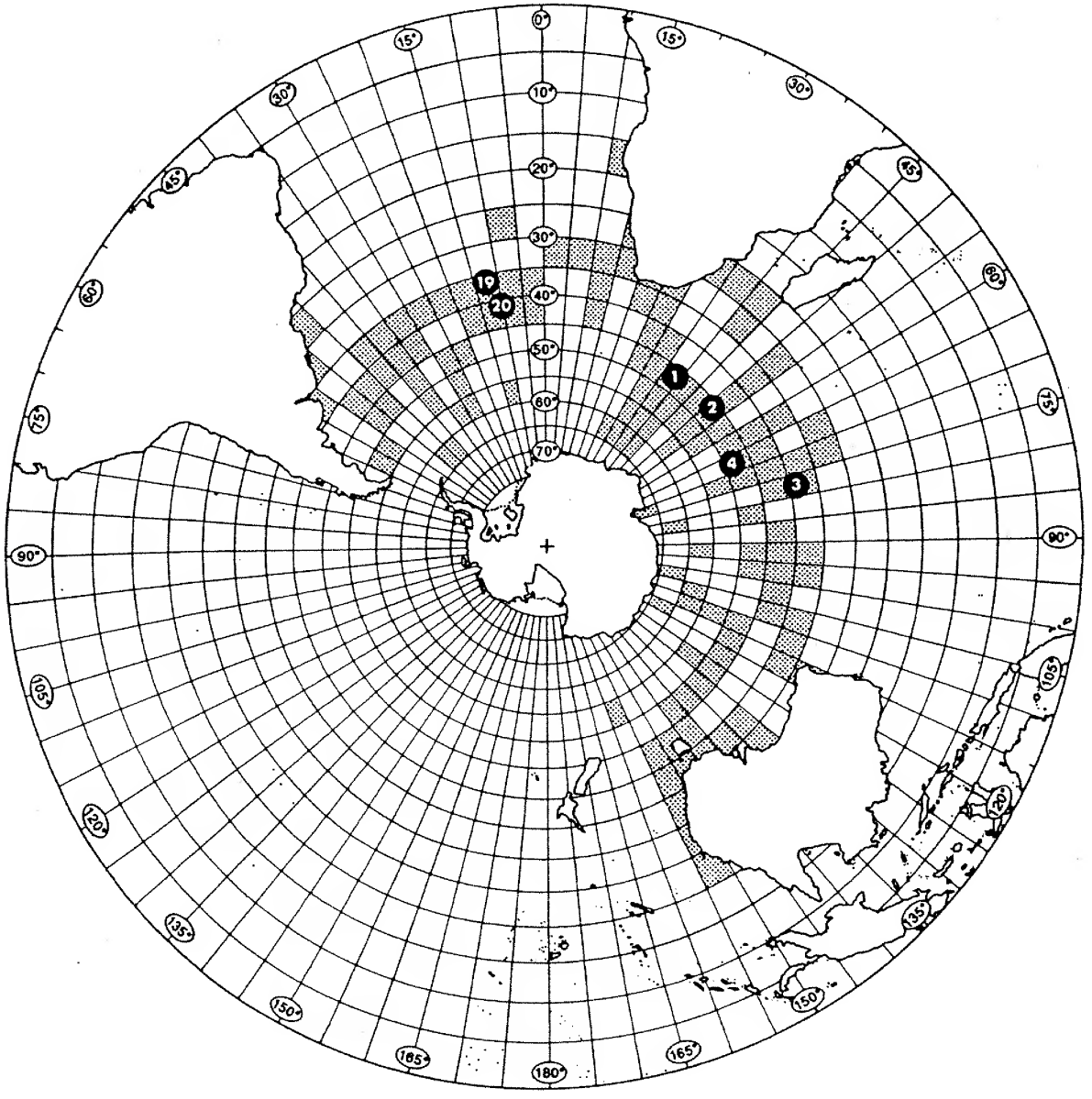


One bird temporarily ashore at South Georgia was banded and later found in a small colony at the Iles Crozet (Prince & Croxall 1983; Jouventin 1990). Shy Albatrosses have been reported from the Indian Ocean, off the African coast and as far north as Somalia and the Red Sea (Meeth & Meeth 1988).

SOOTY ALBATROSS

Phoebetria fusca

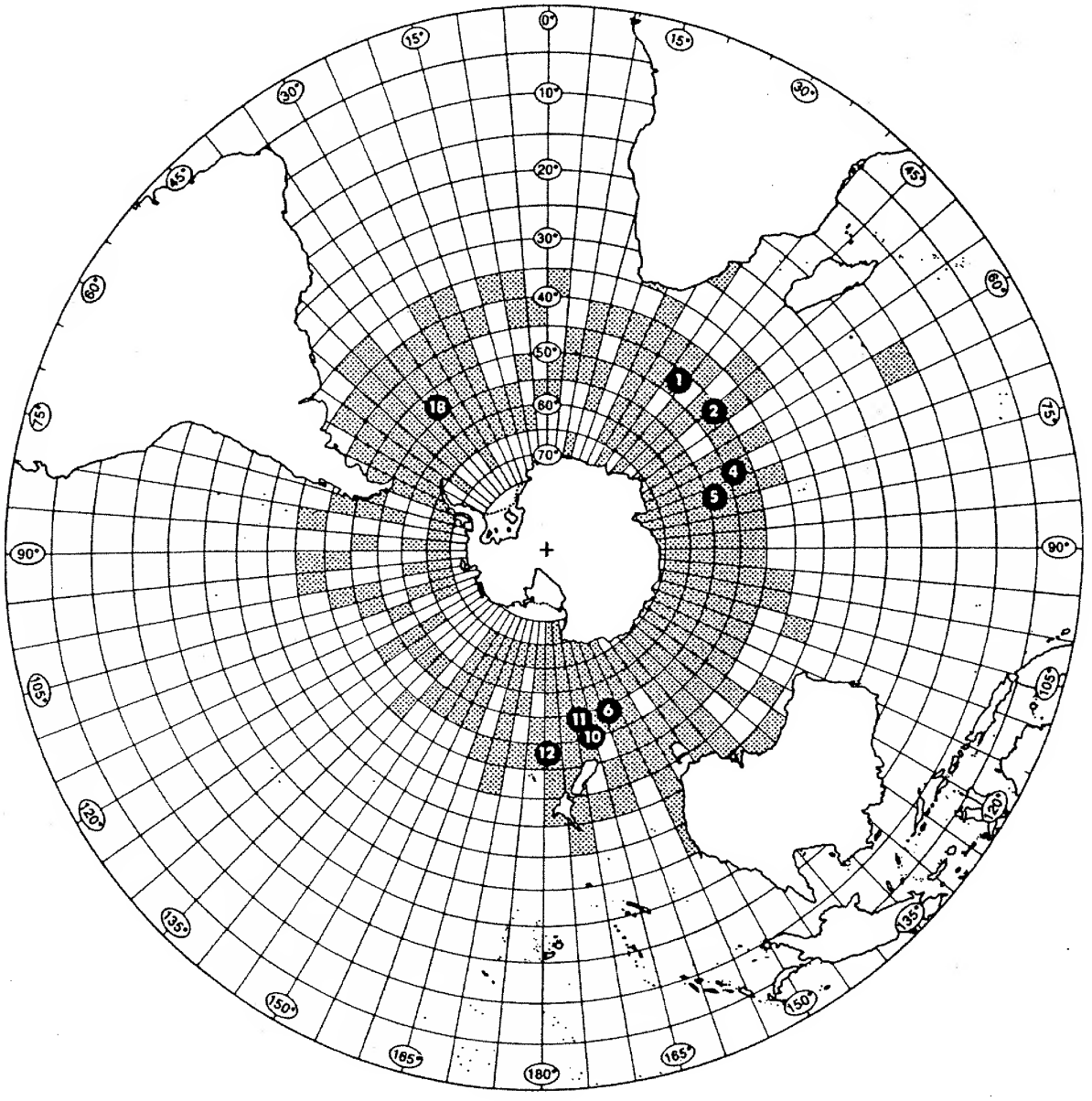
MAP 9.



LIGHT-MANTLED SOOTY ALBATROSS

MAP 10.

Phoebetria palpebrata



REFERENCES

Ainley DG, O'Connor EF & Boekelheide RT. 1984. The marine ecology of birds in the Ross Sea Antarctica. AOU Ornith Monogr 32 . Washington DC, pp 97.
Amiet L. 1958. The distribution of *Diomedea* in eastern Australian waters north of Sydney. *Notornis* 7: 219-230.
Andersen K. 1895. *Diomedea melanophrys* in the Faeroe Islands. Proc Roy. Physical Soc Edinburgh 13: 91-114.
Barritt MK. 1992. Some observations in winter in the tropical south Atlantic. Sea Swallow 41: 4-10.
Bartle JA. 1974. Seabirds of the eastern Cook Strait, New Zealand, in autumn. *Notornis* 21: 135-166.
Bartle JA. 1991. Incidental capture of seabirds in the New Zealand subantarctic squid trawl fishery, 1990. Bird Conservation International (1991): 351-359.
Barton D. 1979. Albatrosses in the western Tasman Sea. *Emu* 79: 31-35.
Barton D. 1979. Notes from the SW Tasman Sea. N'lettr Austral Seabird Gp 12: 27-30.
Barton D. 1980. Birds around the Gascoyne Seamount. N'lettr Austral Seabird Gp 14: 8-13.
Blaber SJM. 1986. The distribution and abundance of seabirds SE of Tasmania and over the Soela seamount during April 1985. *Emu* 86: 239-244.
Blakers M, Davies SJJF & Reilly PH. 1984. The Atlas of Australian Birds. Melbourne, Roy Austral Ornith Union. Melbourne Univ Press , pp738, ill.
Bourne WRP. 1977. Albatrosses occurring off South Africa. Cormorant 2: 7-10.
Bourne WRP. 1989. The evolution, classification and nomenclature of the great albatrosses. *Gerfaut* 79: 105-116.
Bourne WRP and Curtis WF. 1985. South Atlantic seabirds. Sea Swallow 34: 18-28.
Brooke RK & Sinclair JC. 1978. Preliminary list of southern African seabirds. Cormorant 4: 10-17.
Brooke RK, Sinclair IJ & Berutti A. 1980. Geographical variation in *Diomedea chlororhynchos* (Aves: Diomedeidae). Durban Mus Novit 12: 171-180.
Brothers N. 1978. Off the north and west coast of Tasmania. N'lettr Austral Seabird Gp 11: 6-8.
Brothers N. 1988. Albatross search successful thanks to help of professional fishermen. Australian Fisheries, February 1988: 18.
Brown RGB, Cooke F, Kinnear PK & Mills EL. 1975. Summer seabird distribution in Drake Passage, the Chilean fjords and off South America. *Ibis* 117: 339-356.
Carter MJ. 1977. A Buller's Albatross in Victorian waters. Austr Bird Watcher 7: 47.
Carter MJ. 1981. Seabird observations off south-eastern Tasmania. N'lettr Austral Seabird Gp 15: 9-10.
Carter MJ. 1986. book review; SEABIRDS by Peter Harrison. *Emu* 86: 190-192.
Chapman SE 1982. Notes on seabird reports received 1980-1981. Sea Swallow 31: 5-24.
Clancey PA. 1980. Checklist of the South African Ornithological Society. pp 325.
Clark G(S). 1983. Totorore expedition to southern Chile. N'lettr Austral Seabird Gp 18: 20-21.
Clark GS, von Meyer AP, Nelson JW & Watt JN. 1984. Notes on Sooty Shearwaters and other avifauna of the Chilean offshore island of Guafo. *Notornis* 31: 225-231.
Clark GS. 1986. Seabirds observed in the Pacific Southern Ocean during autumn. N'lettr Austral Seabird Gp 23: 1-35.
Clark GS. 1987. Seabird observations between South Georgia and South Africa from a sailing vessel. Cormorant 14: 20-30.
Close DH. 1982. Offshore sightings of Procellariiformes in South Australia. S Austral Ornithologist 28: 210-213.
Cook F & Mills EL. 1972. Summer distribution of pelagic birds off the coast of Argentina. *Ibis* 114: 245-251.
Cox JB. 1976. A review of the procellariiformes occurring in South Australian waters. S Austr Ornithologist 27: 26-82.
Cox JB. 1977. Royal Albatross at Newlands Head, South Australia. S Austral Ornithologist 27: 177-178.
Croxall JP & Prince PA. 1980. Food, feeding ecology and ecological segregation of seabirds at South Georgia. Biol J Linn Soc 14: 103-131.
Cunningham-van Someren GR. 1988. On the first Kenyan record of the Shy Albatross *Diomedea cauta* . Bull BOC 108: 18-19.
Curtis WF. 1988. Highlights of a South Atlantic tour. Sea Swallow 37: 3-8.

Curtis WF. 1988. First occurrence of Buller's Albatross in the Atlantic Ocean. Sea Swallow 37: 62-63.
Darby MM. 1970. Summer seabirds between New Zealand and McMurdo Sound. *Notornis* 17: 28-55.
Devillers P & Terschuren JA. 1978. Midsummer seabird distribution in the Chilean fjords. *Gerfaut* 68: 577-588.
Duhamel G. 1981. Observations ornithologique hivernales dans la partie Australe des oceans Atlantique et Indien. *Alauda* 49: 241-249.
Dunnett GM 1977. Observations of seabirds at sea off Cape Town, October 1975. Cormorant 2: 11-13.
Enticott JW. 1986. The pelagic distribution of the Royal Albatross *Diomedea epomophora*. Cormorant 13:143-156.
Fiennes RT. 1984. Report on the scientific work of the Transglobe Expedition 1978-82 (unpublished).
Flora MD. 1981. Seabird observations in the Southern Ocean south of Africa, summer 1975/1976. Cormorant 9: 3-7.
Gibson JD. 1989. Birds of the County of Camden (1977) revised.
Gregory J. 1941. Notes from the Sharks Bay Area, Western Australia. *Emu* 41: 21-25.
Harris MP. 1973. The Galapagos avifauna. Condor 75: 265-278.
Harris MP & Batchelor AL. 1980. Seabird records from *Lindblad Explorer* in the South Atlantic,1976-1978. Cormorant 8: 59-64.
Harris MP & Hansen L. 1974. Seabird transects between Europe and Rio Plata, South America in autumn 1973. Dansk Orn Foren Tidsskr 68: 117-137.
Harrison P. 1978. Twice across the Tasman. N'lettr Austral Seabird Gp 11: 8-14.
Harrison P. 1978. At sea identification of Wandering and Royal Albatrosses. N'lettr Austral Seabird Gp 11: 14-21.
Harrison P. 1979. Fremantle to Singapore. N'lettr Austral Seabird Gp 12: 32-41.
Harrison P. 1979. Identification of Royal and Wandering Albatrosses. Cormorant 6: 13-20.
Harrison P. 1982. The 1978 BAAS Expedition. N'lettr Austral Seabird Gp 17: 7-9.
Harrison P. 1985. Seabirds an identification guide. Beckenham, Croom Helm, Revised edition; pp 448, ill.
Hicks GRF. 1973. Latitudinal distribution of seabirds between New Zealand and the Ross Sea, December 1970. *Notornis* 20: 231-250.
Hill JA. 1987. Unlucky albatross. The Times, 15-20 June 1987. London.
Humphrey PS, Bridge D, Reynolds P & Peterson R. 1970. Birds of Isla Grande (Tierra del Fuego). Washington, Smithsonian Inst.
Jehl JR Jr. 1973. The distribution of marine birds in Chilean waters in winter. *Auk* 90: 114-135.
Jehl JR Jr. 1974. The distribution and ecology of marine birds over the continental shelf of Argentina in winter. Trans San Diego Soc Nat Hist 17(16): 217-234.
Jehl JR, Todd FS, Rumboll MAE & Schwartz D. 1979. Pelagic birds in the South Atlantic Ocean and at South Georgia in austral summer. *Gerfaut* 69: 13-27.
Jenkins J. 1981. Birds seen at sea around New Zealand during the 1978 BAAS Expedition N'lettr Austral Seabird Gp 16: 3-16.
Jenkins JAF. 1986. The seabirds of Fiji. N'lettr Austral Seabird Gp 25: 1-70.
Johnstone GW & Kerry KR. 1976. Ornithological observations in the Australian sector of the Southern Ocean. In Frith HJ & Calby JH (Eds), Proc 16th Int Ornith Congr : 725-738.
Jones W. 1983. Tasmanian bird report No 12. Hobart, Bird Observers Assn Tasmania.
Jones W. 1985. Tasmanian bird report No 14. Hobart, Bird Observers Assn Tasmania.
Jouventin P & Roux JP. 1983. Discovery of a new albatross. Nature 305: 181.
Jouventin P. 1990. Shy Albatrosses *Diomedea cauta salvini* breeding on Penguin Island, Crozet Archipelago, Indian Ocean. *Ibis* 132: 126-127.
Jouventin P, Mougin JL, Stahl JC, Bartle, JH & Weimerskirch H. 1982. Donnees preliminaire sur la distribution pelagique des oiseaux de TAAF. In Jouventin P, Masse L & Trehen P (Eds), Les ecosystemes subantarctique 51: 427-436.
Jouventin P & Weimerskirch H. 1990. Satellite tracking of wandering albatrosses. Nature 343: 746-748.
Kenyon KW & Rice DW. 1958. Homing of Laysan Albatrosses. Condor 60: 3-6.
King WB. 1967. Preliminary identification manual of seabirds of the tropical Pacific Ocean. Washington DC, Smithsonian Institution.

Royal Naval Bird Watching Society (Bourne WRP). 1984. Reports of seabirds received in 1973-1977. Sea Swallow 33: 39-53.
Royal Naval Bird Watching Society (Bourne WRP). 1989. Seabird reports received in 1987 and 1988. Sea Swallow 38: 7-30.
Royal Naval Bird Watching Society (Bourne WRP & Dixon TJ). 1973. Observations of seabirds 1967-1969. Sea Swallow 22: 29-60.
Royal Naval Bird Watching Society (Bourne WRP & Dixon TJ). 1975. Observations of seabirds 1970-1972. Sea Swallow 24: 65-88.
Royal Naval Bird Watching Society (Chapman SE). 1981. Notes on seabird reports received 1979-1980. Sea Swallow 30: 45-67.
Royal Naval Bird Watching Society (Chapman SE). 1982. Notes on seabird reports received 1980-81. Sea Swallow 31: 5-24.
Royal Naval Bird Watching Society (Chapman SE). 1983. Notes on seabird reports received 1981-82. Sea Swallow 32: 12-21.
Royal Naval Bird Watching Society (Chapman SE). 1984. Notes on seabirds received 1983. Sea Swallow 33: 12-21.
Royal Naval Bird Watching Society (Chapman SE). 1985. Notes on seabirds received 1984. Sea Swallow 34: 46-55.
Royal Naval Bird Watching Society (Chapman SE). 1986. Notes on seabirds received 1985. Sea Swallow 35: 3-13.
Royal Naval Bird Watching Society (Chapman SE & Cheshire NG) 1987. Notes on seabird reports received 1986. Sea Swallow 36: 32-46.
Royal Naval Bird Watching Society (Cheshire NG). 1990. Notes on seabird reports received in 1989. Sea Swallow 39: 18-37.
Royal Naval Bird Watching Society (Cheshire NG). 1991. Reports on seabird reports received in 1990. Sea Swallow 40: 21-37.
Royal Naval Bird Watching Society (Jenkins JAF, Claridge JCR & Sibson RB). 1987. Index to Sea Swallow volumes 1-34. N'lettr Austral Seabird Gp 26: 1-122.
Secker HL. 1969, Procellariiformes in Cook Strait, N.Z.. *Emu* 69: 155-160.
Serventy DL, Serventy V & Warham J. 1971. Handbook of Australian sea-birds. Sydney, AH & AW Reed.
Serventy DL & Whittell HM. 1951. Birds of Western Australia. Perth, Paterson Brokensha; 2nd edn, pp384, ill.
Shuntov VP.1974. Seabirds and biological structure of the ocean. Dovy H (Ed). Translated from the Russian (1972) by Allardt I. US Dept of Sport Fisheries, US Dept of the Interior and National Science Foundation, Washington DC.
Sinclair JC. 1981. Eight previously unreported seabirds at Marion Island, Indian Ocean. *Ardea* 69: 217-218.
South African Ornithological Society, Rarities Committee (Sinclair JC). 1984. Report. *Bokmakierie* 36: 64-68.
South African Ornithological Society, Rarities Committee (Sinclair JC). 1986. Report. *Bokmakierie* 38: 20-25.
Stahl JC. 1987. Distribution des oiseaux marins dans le sud-oeust de l'Ocean Indien: donnees preliminaire de la camapgne Apsara II - Antiprod III . TAAF-MR. In Fontugne & Fiala (Eds) Rapport des campagne a la mer. 84-01: 175-190.
Stahl JC, Jouventin P, Mougin JL. Roux JP, & Weimerskirch H. 1985. Foraging zones of seabirds in the Crozet sector of the Southern Ocean. In Siegfried WR, Condy PR & Laws RM (Eds). Antarctic Nutrient Cycles and Food Webs : 478-486. Springer-Verlag, Berlin.
Strong P. 1965. Buller's Albatross: An addition to the Australian list. *Emu* 64: 101-104.
Summerhayes CP. 1969. Seabirds seen in the northern Tasman Sea in winter. NZ J mar freshwat res 3: 560-570.
Summerhayes CP, Hofmeyer PK & Rioux RH. 1974. Seabirds off the southwestern coast of Africa. Ostrich 45: 83-109.
Swanson N. 1973. Status, latitudinal and seasonal occurrences of albatross species in Kangaroo Island waters (South Australia). S Austr Ornith 26: 75-77.
Tasker ML, Hope Jones P, Dixon T and Blake BF. 1984. Counting seabirds at sea from ships: a review of methods employed and a suggestion for a standardized approach. *Auk* 101:567-577.

Koch KH & Reinsch HH. 1978. Ornithological observations during the German Antarctic expedition 1975/76. Beitr Vogelkd Leipzig 24: 305-328.
Langrand O. 1990. Guide to the Birds of Madagascar. Trans Daniels W; Yale Univ Press, pp 364, ill.
Linkowski TB & Rembiszewski JM. 1978. Distribution of seabirds of the Argentina coast and feeding habits of the bird fauna of the Drake Passage and Scotia Sea. Polsk Arch. Hydrobiol 25: 717-727.
Liversidge R & Le Gras GM. 1981. Observations of seabirds off the eastern Cape, South Africa, 1958-1963. In Cooper J (Ed) , Proc Symp birds Sea & Shore: 149-167.
Marchant S & Higgins PJ (Co-ordinators).1990. The Handbook of Australian, New Zealand & Antarctic Birds,1A. Melbourne, Oxford University Press, for RAOU, pp735, ill.
Marchant S. 1977. A seawatch on the southern coast of New South Wales. *Emu* 77: 9-18.
McQuaid CD & Ricketts LH. 1984. Seabird records from the Transglobe Expedition, Part 1: African and New Zealand sectors of the Southern Ocean. Cormorant 12: 14-28.
Meeth P and Meeth K. 1983. Seabird observations from six Pacific Ocean crossings. Sea Swallow 32: 58-65.
Meeth P & Meeth K. 1988. A Shy Albatross off Somalia. Sea Swallow 37: 66.
Meinertzhagen R. 1912. On the birds of Mauritius. *Ibis* 9th Ser. 6(3): 82-108.
Miskelly CM. 1984. Birds of the Western Chain Snares Islands, 1983-84. *Notornis* 31: 209-223.
Monnet C. 1990. First record of a Grey-headed Albatross (*Diomedea chrysostoma*) in the tropical Pacific. Mar Ornith 18: 57-59.
Murphy RC. 1930. Birds collected during the Whitney South Sea Expedition. Am Mus Novit 11(419): 1-15.
Parker SA, Eckert HJ, Ragless GB, Cox JB & Reid NCH. 1979. An annotated checklist of the birds of South Australia, part 1. Adelaide, S Aust Ornith Assn.
Patterson RM. 1987. Bird observations 1986 - Systematic list. Tasmanian Bird Rep 16: 49-61.
Patterson RM. 1989. Bird observations 1988 - Systematic list. Tasmanian Bird Rep 18: 53-78.
Patterson RM & Rounsevell. 1984. Bird observations 1983 - Systematic list. Tasmanian Bird Rep 13: 31-41.
Pettingill ER. 1962. Penguin Summer. London, Cassell.
Pocklington R. 1979. An oceanographic interpretation of seabird distribution in the Indian Ocean. Marine Biology 51: 9-21.
Powlesland RG. 1985. Seabirds found dead on New Zealand beaches in 1983 and a review of albatross recoveries since 1960. *Notornis* 32: 23-41.
Prince PA & Croxall JP. 1983. Birds of South Georgia: New records and re-evaluation of status. Bull Brit Antarct Surv 59: 15-27.
Robertson CJR. 1972. Two unusual albatross recoveries *Notornis* 19: 91.
Robertson CJR. 1975. Yellow-nosed Mollymawk (*Diomedea chlororhynchos*) recorded in the Chatham Islands. *Notornis* 22: 342-344.
Robertson CJR. 1980. Albatrosses of Australia. N'lettr Austral Seabird Gp 14: 19.
Robertson CJR & Jenkins J. 1981. Birds seen at sea in southern New Zealand waters, February-June1981. N'lettr Austral Seabird Gp 16: 17-27.
Robertson CJR & Kinsky FC. 1972. The dispersal movements of the Royal Albatross (*Diomedea epomophora*). *Notornis* 19:289-301.
Rodriguez LG. 1972. Observaciones sobre aves marinas en las pesquerias del Atlantico Sudafricano. *Ardeola* 16: 159-192.
Rogers AEF. 1969. Further occurrences of Buller's Albatross in Australia. Emu 69:175-178.
Rogers AEF. 1970. Royal Albatross off Sydney Heads. *Emu* 70: 201.
Rootes DM. 1988. The status of birds at Signy Island, South Orkney Islands. Bull Brit Antarct Surv 80: 87-119.
Roux JP. 1987. Sooty Albatross *Phoebetria fusca* breeding in the Kerguelen Archipelago: A confirmation. Cormorant 14: 50-51.
Roux JP & Martinez J. 1987. Rare, vagrant and introduced birds at Amsterdam and Saint Paul Islands, southern Indian Ocean. Cormorant 14: 3-19.
Rowlands BW. 1987. Seabirds and shorebirds observed on Rodrigues and its lagoon islets in July 1986. Cormorant 14: 31-38.
Royal Naval Bird Watching Society (Bourne WRP). 1966. Observations of sea-birds. Sea Swallow 18: 9-36.
Royal Naval Bird Watching Society (Bourne WRP). 1970. Observations of seabirds. Sea Swallow 20: 47-55.

Teixeira DM, Nacinovic JB, Schloempl M & Kischlat EE. 1988. untitled note, Bull Brit Ornith Club 108: 136-139.
Thomas G, Croxall JP & Prince PA. 1983. Breeding biology of the Light-mantled Sooty Albatross (*Phoebetria palpebrata*) at South Georgia. J Zool Lond 199: 123-135.
Thurston MH. 1982, Ornithological observations in the south Atlantic Ocean and Weddell Sea 1959-1964. Bull Brit Antarct Surv 55: 77-104.
Tickell WLN. 1967. Movements of Black-browed and Grey-headed Albatrosses in the South Atlantic. *Emu* 66: 357-367.
Tickell WLN. 1969. Plumage changes in young albatrosses. *Ibis* 111:102-105.
Tickell WLN & Woods RW. 1972. Ornithological observations at sea in the south Atlantic Ocean 1954-1964. Bull Brit Antarct Surv 31: 63-84.
Voisin JF. 1980. Observations of birds at sea between Cape Town, Marion and Crozet Islands, summer 1973-74. Cormorant 8: 53-58.
Voisin JF. 1983. Observations of birds at sea between Cape Town, Tristan da Cunha and Gough Island, October-November 1977. Cormorant 11: 24-34.
Voisin JF. 1983. Observations of birds at sea between Reunion, Kerguelen and the Crozet Islands, January-March 1982. Cormorant 11: 49-58.
Vooren CM. 1973.Notes on sea birds between New Zealand and the Bounty Islands. *Notornis* 20: 301-310.
Vooren CM. 1977. Seabird observations off the west coast of the South Island, New Zealand, October-November 1975. *Notornis* 24: 137-139.
Wanlass S & Harris MP. 1988. Seabird records from the Bellingshausen, Amundsen and Ross Seas. Bull Brit Antarct Surv 81: 87-92.
Warham J. 1982. A distant recovery of Buller's Mollymawk. *Notornis* 29: 213-214.
Watson GE, Angle JP, Harper PC, Bridge MA, Schlatter RP, Tickell WLN, Boyd JC & Boyd MM. 1971. Birds of the Antarctic and Subantarctic. Antarctic Map Folio Series 14. New York, American Geographical Society.
Weimerskirch H, Jouventin P & Stahl JC. 1986. Comparative ecology of six albatross species breeding in the Crozet Islands. *Ibis* 128: 195-213.
Weimerskirch H, Salamolard M, Sarrazin F & Jouventin P. 1992. Foraging strategy of a pelagic seabird; the Wandering Albatross. Acta XX Congressus Internationalis Ornithologici; Wellington , NZ Ornith Cong Trust Board.
Williams AJ. 1987. Records of Light-mantled Sooty Albatross *Phoebetria palpebrata* at the Tristan da Cunha Islands and Gough Island. Cormorant 15: 103-105.
Williams GR. 1960. The birds of Pitcairn Island, Central South Pacific Ocean. *Ibis* 102: 58-70.
Woehler EJ, Graham R & Hodges CL. 1991. Multiple sightings of Royal Albatross *Diomedea epomophora* in the southern Indian Ocean. Marine Ornithology 19: 71-74.
Woehler EJ, Hodges CL, & Watts D. 1990. ANARE Research Notes 77. Antarctic Division DASETT.
Wood CA. 1923. The northern range-limit of the Royal Albatross. *Emu* 23: 151.
Wood KA. 1992. Seasonal abundance and spatial distribution of albatrosses off central New South Wales. Aust Bird Watcher 14: 206-225.
Woods RW. 1988. Guide to birds of the Falkland Islands. Oswestry, Anthony Nelson; pp256 ill.
Young CG. 1944. Some notes taken at sea, southern Atlantic. *Ibis* 86: 456-457.
Zinderen Bakker EM van Jr. 1971. Birds observed at sea between Prince Edward Islands and Cape Town. In Zinderen Bakker EM van Sr, Winterbottom JM & Dyer RA (Eds), Marion and Prince Edward Islands: 249-250. Cape Town, Balkema.
Zink RM. 1981. Observations of seabirds during a cruise from Ross Island to Anvers Island, Antarctica. Wilson Bull 93: 1-20.

W L N Tickell
Department of Zoology
University of Bristol
Bristol BS8 1UG.

Alaska

Brian Lance, Janos Hennicke, and **Dan Roby,** all with the U.S. Fish and Wildlife Service's Wildlife Cooperative Unit at the University of Alaska-Fairbanks, conducted research on **Red-legged and Black-legged Kittiwakes** nesting on St. George Island in the Pribilofs this summer. They investigated the relationship between diets of the two species and the growth and survival of nestlings. Both species experienced mediocre nesting success in 1993, but contrary to the norm, Red-legged Kittiwakes experienced higher nesting success (21% of nests with eggs fledged young) than Black-legged Kittiwakes (10%). An interspecific cross-fostering experiment between the two kittiwake species showed that 1) survival rates of interspecifically cross-fostered chicks of both species were very similar to those of control chicks (raised by their parents), 2) Black-legged Kittiwake chicks (both control and cross-fostered) grew at a significantly higher rate than Red-legged Kittiwake chicks, and 3) there were no intraspecific differences in growth rates between cross-fostered and control chicks. Given the differences in chick diets between the two species, these results raise some intriguing questions about energetic constraints for reproduction in Red-legged Kittiwakes.

Tara Curry and **Ed Murphy**, University of Alaska-Fairbanks, are studying aircraft disturbance to cliffnesting seabirds (primarily **Thick-billed Murres**) near the new airstrip on St. George Island. **Sharon Loy**, University of Alaska-Fairbanks, and **Ed Murphy** are studying **Red-legged and Black-legged Kittiwake** use of inland lakes and the new airstrip on St. George Island. Throughout the breeding season, hundreds of thousands of kittiwakes can be found roosting on the center of the new airstrip. **Mike Williams, Cheryl Chetkiewicz,** and **Gleb Raygorodetsky,** University of Alaska-Fairbanks, assisted in the above two studies this summer. **Alan Springer,** Institute of Marine Science, University of Alaska, continued his study of seabird diets on the Pribilof Islands.

Dean Kildaw, University of Alaska-Fairbanks, assisted by **Rachel Schindler**, is studying the comparative breeding ecology of **Red-legged and Black-legged Kittiwakes** on St. George Island. **Paul Rossow**, University of Alaska-Fairbanks, and **Ed Murphy** are studying **Common Raven** predation and the caching of murre eggs at Bluff, Alaska. **Suzann Speckman,** University of Alaska, continued her work on Marbled Murrelet activity patterns in Auke Bay.

Vivian Mendenhall and **Shawn Stephensen,** U.S. Fish and Wildlife Service (FWS), Marine and Coastal Bird Project (MCBP), Anchorage, are preparing the Alaska Seabird Colony Catalog database for entry of colony data from the Russian Far East. They are working with **Alexander Ya. Kondratyev** and **Luba Kondratyev** of the Institute of Biological Problems of the North, Magadan. Colony data for the Magadan, Kamchatka, and Chukotsk regions exist now; eventually the catalog will contain data for the entire coast of the Russian Far East, from Vladivostok to the mouth of the Kolyma River. The new Beringian Seabird Colony Catalog database will be able to produce tabular and GIS outputs for scientists in both Russia and North America. The joint Beringian Catalog will be published in about 1996.

Kathy Kuletz, along with **Dennis Marks** and **Nancy Naslund,** FWS/MCBP-Anchorage, continued their *Exxon Valdez* Oil Spill Restoration project on **Marbled Murrelets.** They surveyed murrelet dawn activity in the Kenai Fjords National Park (KFNP) and will be looking at murrelet dawn activity relative to habitat from Prince William Sound (PWS), KFNP and Afognak Island. **Rick Burns** and **Lynn Prestash,** from British Columbia, worked with Kathy to mist net and radio tag murrelets in PWS. They successfully tagged and followed nine marbled and one **Kittlitz's murrelet** this summer.

Beverly Agler, Steve Kendall, Pam Seiser, et al., FWS/MCBP-Anchorage, completed the first comprehensive summer (June) survey of seabirds in Lower Cook Inlet (LCI). They observed over 800,000 waterbirds in LCI which was much higher than the summer estimate of about 380,000 for PWS. They observed major concentrations on the eastern side of the inlet.

Gerry Sanger, Mary Cody, et al., FWS/MCBP-Anchorage, conducted the first comprehensive survey of **Pigeon Guillemots** colonies in Prince William Sound (PWS). They surveyed 98% of the PWS and found 143 colonies and another 41 possible colonies. The majority of these colonies were previously unknown. They counted a total of 3,021 guillemots, half of which were associated with 22 colonies. About 60% of the colonies were observed in southwestern PWS.

The FWS will be hosting the second meeting of the Beringian International Seabird Working Group (BISWG) in Anchorage, January 17-18, 1994 (see PSG Bulletin 20[1] for a short discourse on the BISWG). If you are interested in attending please contact **Kent Wohl,** FWS/MCBP-Anchorage, at 907-786-3444.

Regional Reports

Lisa Haggblom and others on the Togiak National Wildlife Refuge monitored the population and productivity of seabirds at Cape Pierce and Cape Newenham during summer 1993. Preliminary analysis suggests **Black-legged Kittiwakes** had lower productivity than in 1992. However, productivity was higher in 1992 than in any other year at Cape Peirce. **Common Murres** had similar reproductive success in 1993 as in past years. Breeding phenology in 1993 was earlier than in past years. Approximately ten kittiwakes were collected for analysis of stomach contents, and beached birds were recorded through September at Cape Peirce.

At the Alaska Fish and Wildlife Research Center (now in the National Biological Survey) **Scott Hatch, John Piatt,** and **Lindsey Hayes** continued three field projects: studies of **Black-legged Kittiwakes** and other seabirds on Middleton Island, comparable work on Talan Island in the Magadan district of Russia (in cooperation with **A. Ya. Kondratyev** et al.), and puffin diet sampling at numerous colonies in the Gulf of Alaska. They also made a new start on seabird population dynamics at the Semidi Islands, building on earlier work by the Center and the Alaska Maritime NWR at that site. Publications by staff that appeared during the year included reviews of population ecology in Pacific kittiwakes and fulmars, analysis of adult survival of kittiwakes on Middleton Island, an account of behavioral ecology of kittiwakes during chick-rearing on Middleton Island, and an analysis of **Marbled Murrelet** distribution and abundance in Alaska.

Biologists with Alaska Biological Research, Inc. (ABR), Fairbanks, conducted several studies of **Spectacled Eiders** in northern Alaska during summer 1993, funded by ARCO Alaska, Inc., and Conoco, Inc. **Bob Ritchie** and **Debbie Flint** flew aerial surveys for breeding pairs of Spectacled Eiders between the Canning and Colville rivers and evaluated the efficacy of fixed-wing aircraft versus helicopters as aerial survey platforms for eiders. During August, Bob and **Rick Johnson** used a helicopter to survey eider broods within the Kuparuk Oilfield on Alaska's North Slope. **Betty Anderson** and **Brian Cooper** evaluated the distribution of eiders relative to the road system in the Kuparuk Oilfield and compared several techniques (e.g., foot searches, rope dragging, and the use of a trained dog) for locating eider nests. **Louise Smith** and **Larry Byrne** completed a second year of study on **Spectacled Eiders, Tundra Swans,** and **Yellow-billed Loons** using the Colville River Delta. In western Alaska, **Debbie Flint** flew an aerial survey for breeding eiders near the village of St. Michael on Norton Sound for the Alaska Department of Transportation and Public Facilities. **Bob Day** continued to serve on the **Spectacled Eider** Recovery Team.

Brian Cooper, ABR, conducted a pilot study at Nuka Bay on the Kenai Peninsula, in cooperation with **Kathy Kuletz**, FWS/MCBP-Anchorage, to determine if a marine radar system could monitor **Marbled Murrelets** moving inland to nesting areas in coastal old-growth forest and to compare the number of murrelets observed with the radar to those made by ground observers. Brian and **Bob Day** also used marine radar for a study of endangered seabirds on Kauai, Hawaii (see Pacific Region report).

Staff at the Alaska Maritime NWR were busy this past summer with several seabird projects. **Jeff Williams** and **Julian Fisher** monitored the productivity and food habits of several species of seabirds at Buldir Island. Jeff, **Joe Meehan, Angela Palmer,** and **Marianna Tomias** conducted surveys of sea ducks at several locations in the Aleutians. **Vern Byrd, Andrew Durand,** and Joe monitored populations and productivity of murres at Kagamil Island, and murres, **Red-legged Kittiwakes,** and **Tufted Puffins** at Bogoslof Island. **Art Sowls** and **Don and Belinda Dragoo** monitored **Red-legged and Black-legged Kittiwakes** at St. Paul and St. George islands (Pribilofs), as well as **Red-faced Cormorants** on St. Paul and murres on St. George. Art, along with **Alexander Golovkin** (Institute of Nature Conservation and Reserves, Moscow) and **Chris Haney** (Penn State University), censused seabirds on Otter Island, a small island of the Pribilof group. Art also designed a project to prevent the introduction of rats on the Pribilofs.

Black-legged Kittiwake productivity was monitored by **Art Sowls** at Cape Lisburne; he also monitored the effects of blasting on murres at Cape Lisburne. **Greg Thomson, Andrew Durand, Jeff Wraley,** and **Ed Bailey** continued the refuge's program of removing introduced foxes at Yunaska, Little Koniuji, and Herbert islands. **Leslie Slater** and **Vern Byrd** monitored populations and productivity of **Black-legged Kittiwakes** and **Common Murres** at Gull Island and **Tufted Puffins** at Flat Island, both in Cook Inlet. Leslie also monitored breeding densities of burrow nesters at St. Lazaria, Lowrie and Forrester islands in Southeast Alaska and populations and productivity of **Common Murres, Black-legged Kittiwakes,** and **Horned Puffins** at Chisik and Duck Islands in Cook Inlet. **Dave Roseneau, Lynn Denlinger, Art Kettle, Joel Cooper,** et al. monitored populations and productivity of murres and **Black-legged Kittiwakes** in the Barren Islands.

Vern Byrd and **Jeff Williams** produced species accounts for the **Red-legged Kittiwake** and the **Whiskered**

Auklet for the new "The Birds of North America." **Ed Bailey** produced a FWS Resource Publication, "Introduction of Foxes to Alaskan Islands-History, Effects on Avifauna, and Eradication." Ed and Vern also developed an Environmental Assessment on the use of Bromethalin and Brodifacoum (rodenticides) on islands following shipwrecks.

Kent Wohl

Washington/British Columbia

WASHINGTON

Ulrich Wilson, Coastal Refuges Office of the U. S. Fish and Wildlife Service (USFWS) in Sequim, is continuing his annual census by photographs from helicopter of breeding cormorants and murres on the outer coast and in the strait of Juan de Fuca, including Protection and Smith Islands. These surveys are slated to be expanded next year as part of an oil spill restoration plan being implemented in this area. He also conducted more intensive breeding surveys and studies on land and by boat at Protection and Smith Islands, with emphasis on cormorants, **Pigeon Guillemots, Rhinoceros Auklets**, and **Tufted Puffins**. Other species surveyed by Ulrich included **Peregrine Falcons** (May-June), **Brown Pelicans** (September), **Black Brant** (October-May), waterfowl in the Dungeness/Sequim Bay area (October-May), and eel grass mapping/analysis from DOT photos in the Dungeness/Sequim area. Preliminary results suggest that murre numbers were very low on outer coast colonies and that much lower numbers of **Pigeon Guillemots** were seen around colonies like Protection Island this year. It also appears that eel grass beds in the Dungeness and Sequim Bay area may have decreased 30 percent since last censused. **Heidi Peterson** is a new biological technician at the refuge that will be assisting and conducting some of these surveys in the future.

Louise Vicencio and **Mike McMinn** (USFWS) with the Nisqually Refuge continued rudimentary seabird surveys from boats of colonies in the San Juan Islands during the summer. They have also conducted surveys of **Brown Pelicans** in Grays Harbor (September-October), shorebirds in Grays Harbor (April, August, and November), as well as monthly aerial surveys of waterfowl in southern Puget Sound and Grays Harbor (September-April). One interesting observation of theirs was that up to 2,000 pelicans stayed later (into October) in the Grays Harbor area this year.

Don Williamson (USFWS) joined the Willapa Bay refuge staff last spring, having come from Midway Island, and has been involved with **Snowy Plover** surveys during the summer and monthly waterfowl surveys in the fall. He recently saw 800 pelicans on the lower Columbia River area. Don is considering censuses of breeding cormorants in the Cape Disappointment Area along with some monitoring of marine bird use in or just outside of Willapa Bay and the lower Columbia River. **Roy Lowe**, with the Oregon Coastal Islands Refuge, surveyed pelicans in the Willapa Bay area this year,

Julia Parrish, a research associate with the Institute of Environmental Studies at the University of Washington, conducted her fourth year of colony studies at Tatoosh Island. Her work with murres, recently funded by USFWS (Enhancement office, Olympia), has concentrated on population levels and productivity as well as interactions with predators.

Mary Mahaffy (USFWS), with the Puget Sound Estuary Program in Olympia, and **George Divoky** continued to put out nest boxes for **Pigeon Guillemots** at six sites around Puget Sound with the plan of marking and using these birds and their offspring for contaminant monitoring. **Mary Mahaffy** and **Camille Bennett** captured **Surf Scoters** in the Tacoma area and radio-tagged six of them last year as part of a study that will evaluate and monitor the relationship between contaminants and scoters. Their goal this winter is to capture 30 scoters.

The Washington Department of Wildlife (WDW) initiated an interaction study monitoring the non-treaty gillnet fisheries in North Puget Sound under a contractual agreement with the National Marine Fisheries Service and the U. S. Fish and Wildlife Service. Additional non-state programs are in place to monitor non-treaty purse seine and treaty gillnet fisheries. **Bill Ritchie** (WDW) organized and supervised the state observer program during the 1993 summer-fall fishing season. Preliminary findings include the recovery of one **Marbled Murrelet** during a pre-season test fishery and interactions with several other species of seabirds, primarily **Common Murres** and **Rhinoceros Auklets**. A future program is anticipated.

The terrestrial **Marbled Murrelet** studies in Washington were curtailed this year because of reduced funds. However, **Bill Ritchie**, WDW murrelet project leader, and others were successful in finding the sixth known nest in Washington state. This nest was the first found in southwestern Washington as well as the first nest found in a western red cedar. The chick in this nest was observed until it successfully fledged. Ritchie and the state Marbled

Murrelet program were also involved in training and coordination with other agencies, and they helped develop the new language and rules put out by the Forestry Practices Board.

Dave Nysewander, Janet Stein, and **Matt Nixon** continued summer and winter aerial surveys of all inland marine waters and shorelines of Washington state, under the project design of the Puget Sound Ambient Monitoring Project (WDW). The project received the final products, revisions, and software developed for them by Glenn Ford, ECI, in Portland. This project also expanded its summer field work to include boat work that assisted in developing pilot studies on correction factors for the aerial surveys and adult/juvenile ratios of **Marbled Murrelets** seen in marine waters primarily in August. The boat work also included revisiting all locations where higher murrelet numbers were seen by Dzinbal and Leschner 1987 as well as quantifiing some areas of concentration not noted earlier, primarily northern Hood Canal and the Nisqually River delta vicinity.

Dan Vareaujean received funding from ITT Rayonnier for some aerial surveys for **Marbled Murrelets** on the outer coast of Washington and into the Strait of Juan de Fuca as far as Port Angeles in early September. These surveys included nearshore and offshore tracklines.

Terry Wahl (Bellingham, WA) and others continue to gather and analyze data on seabird occurrence off the outer Washington coast for the 22nd year. Fall migration trips were conducted out of Westport, WA almost every weekend from mid-July to mid-October. Trips are also run frequently at other times of the year. Anyone interested can contact Terry at (206) 733-8255. Terry noted that pelagic seabird numbers seen offshore in 1993 were the lowest ever recorded during their years of observation—presumably related at least in part to the most recent El Nino event.

BRITISH COLUMBIA

Alan Burger (University of Victoria) is starting a new project that will use a ship based at the Bamfield Marine Station to map seabird distribution offshore from southwestern Vancouver Island. This project will tie in with related oceanographic and hydrographic features of the area and will undoubtedly be useful for evaluation of any oil spills that may occur in this busy shipping channel. Alan is also involved with **Marbled Murrelet** surveys in Vancouver Island forests and the marine waters of Barkley Sound (described in more detail in Marbled Murrelet Technical Committee report). Burger also assisted with marine surveys associated with the Parks Canada West Coast Trail on Vancouver Island.

Sharon DeChesne (University of Victoria) is studying variations in vocalizations of **Marbled Murrelets** both at sea and inland.

Ian Goudie, Canadian Wildlife Service (CWS), was quite successful this last summer in using his new type of portable collapsible drive pens along with kayaks in capturing close to 500 molting **Harlequin Ducks** in the Comox area of Vancouver Island. WDW biologists **Greg Schirato** and **Matt Nixon** travelled north to assist and observe the banding exercise. Lime green color bands (9 mm) were put on the ducks' right legs while the traditional USFWS metal bands were put on the left legs. Some of the more interesting results of this capture effort show that 1) of 7 decks captured last year at this same spot, 5 were recaptured this year; 2) a second-year male was captured which had been banded as juvenile on the Quilcene River in Washington state; and 3) an adult male was captured which had been banded as an adult last spring in Montana on a Flathead River tributary. Ian is also involved with additional studies of **Black Brant** using the Boundary Bay area; he will collaborate with WDW biologists in identifying and surveying tsub-populations that frequent the border.

Gary Kaiser, CWS, continued work with the **Marbled Murrelet** project in Desolation Sound and elsewhere (for details see the Marbled Murrelet Technical Committee report). **Gary and Ann Harfenist,** CWS, were involved with both field and paper work required for preparation of an environmental impact assessment needed to begin a rat eradication program on Langara Island in the Queen Charlotte Islands. **Ancient Murrelets** on that island have decreased from 25,000 in 1981 to 14,000 in 1993. **Rowley Taylor** from New Zealand is bringing his expertise, methods, and hopefully success from down below to this project. Gary also reported tnumerous (at least 1000) dead murres washing up on Boundary Bay shorelines in August and September. A similar, smaller dieoff of murres the previous summer was investigated at that time, and autopsies indicated drowning as the cause of death. Cut marks, feather damage, and the like suggested that gill nets were the cause of this drowning. The Canadian biologists suspect that these dead murres came from American gillnet fisheries to the south. Canadian gillnet fisheries no longer use the monofilament that the American fisheries do, and they speculate that these nets may have different catching rates for birds.

Tony Gaston, CWS, went to Helgesen Island in the Queen Charlotte Islands area to examine the demography of the **Rhinoceros Auklets** breeding there. He discovered that raccoons have reached the island and that **Rhinoceros**

Auklets no longer reproduce there. This island was estimated to have had 8,000 pairs of auklets breeding previously and is now a candidate for a raccoon control program to be initiated as soon as possible in hopes that some of the birds might return.

Robert Butler, CWS, has been continuing his suite of studies centering on **Western Sandpipers**. The banding and migration portions are essentially done and are being written up for publication. Some breeding studies in Alaska and some wintering surveys in Panama continue. **Kees Vermeer**, CWS, has been assisting Rob in describing the overall use over a year by shorebirds of various habitat in the Queen Charlotte Islands. Vermeer, CWS, also examined the breeding biology of **Pigeon Guillemots** in the Queen Charlotte Islands this last summer. He is preparing a paper on dioxin pollution in the vicinity of Vancouver Island, an estuarine report centering on the Strait of Georgia, and a synthesis document on marine birds associated with the Queen Charlotte Islands.

Dave Nyeswander

Oregon/Northern California

Jan Hodder and students at the Oregon Institute of Marine Biology continued with their study of the nesting success of **Pelagic Cormorants** at the OIMB colony (CC# 270-008) in Sunset Bay. This was the 21th consecutive year that this colony has been studied.

Kathy Merrifield of Oregon State University is currently analyzing her data collected on weekly sea watches conducted near Yachats, Oregon last year where she was documenting species, numbers and direction of flight for all species of birds observed. She is also writing up the results of her study of species composition of gull flocks conducted at several sites in Lincoln County, Oregon. Fieldwork this year includes documenting pelagic bird occurrence at Yaquina Head, Seal Rock, and Yachats, Oregon by conducting bi-monthly censuses.

Michael Fry and **Jay Davis** (University of California-Davis) are continuing a study begun in 1992 to determine organochlorine contaminant levels in seabirds along the Pacific coast of North America. As part of this year's study, 2 eggs each from 20 **Double-crested Cormorant** nests on Hunters Island, Oregon were collected for analysis. The Hunters Island collection will be used as the control group to monitor organochlorine pollutants being absorbed by seabirds at other known or suspected problem sites.

A cooperative study by Oregon Department of Fish and Wildlife (ODF&W) and the United States Fish and Wildlife Service (USFWS) was conducted at Three Arch Rocks National Wildlife Refuge (NWF) from 1 May to 9 September 1993. Participants in the study included **Marion Mann, Susan Riemer** and **Robin Brown** (ODF&W), and **Matthew Criblez, Dave Pitkin** and **Roy Lowe** (USFWS). The purpose of the study was to document human activities near the refuge rocks and describe the extent of disturbances occurring to seabirds and Steller Sea Lions. The results of the study will be used in developing measures to protect the resources at this popular recreational area.

Harlequin Duck population, distribution, and ecology was surveyed in the Cascade Mountain Range of Oregon from April-July 1993. This survey was a cooperative effort involving the ODF&W, USFS and BLM. **Rebecca Goggans** was the principal investigator of this study. State waterfowl coordinator **Brad Bales** is organizing coastwide surveys of **Harlequin Ducks** in Oregon to be conducted during the wintering period of 1993-94.

Roy Lowe and **David Pitkin** (USFWS-Oregon Coastal Refuges) continued annual seabird monitoring projects in Oregon in 1993. Activities included aerial photographic surveys of all **Common Murre** and **Brandt's** and **Double-crested Cormorant** colonies on the Oregon coast. Nesting attempts by **Pelagic Cormorants** at 17 central Oregon coast colonies was monitored again this year. A beached bird mortality study on 7.1 km of beach located between Seal Rock and Alsea Bay in Lincoln County, Oregon was conducted from June through September. This is the eighth consecutive year of this study. The seventh annual aerial survey of **Brown Pelicans** along the Oregon and Washington coasts was conducted in mid-September during the peak use period. **Roy Lowe, David Pitkin,** and **Nancy Morrissey** (OCR), **Mary-Jo Hedrick** (ODF&W), and **Ulrich Wilson, Louise Vicencios,** and **Mike McMinn** (Nisqually NWRC) participated in the survey. Spring and fall aerial surveys of **Aleutian Canada Goose** use of Oregon coastal rocks is also continuing.

Harry Carter (USFWS - Northern Prairie Wildlife Research Center - Dixon, CA) and **Jean Takekawa** (San Francisco Bay NWRC) began an annual monitoring program in 1993 for **Common Murres, Brandt's Cormorants** and **Double-crested Cormorants** throughout California. Funding for this program is being provided by the California Department of Fish and Game (Oil Spill Preven-

tion and Response), U.S. Fish and Wildlife Service, and the U.S. Navy. Aerial photographic surveys of almost all colonies from the Oregon border to San Francisco Bay were conducted in late May and early June. Numbers of cormorants and murres appeared to be lower than found in the last survey of this area in 1989-90, presumably due to the impacts of the intense 1992-93 El Nino event. Lower numbers of murres may have reflected colony abandonment in 1993 as seen throughout Oregon this year. Slides of representative colonies will be counted over the winter to determine breeding population estimates. Surveys are also being planned for 1994 and beyond. The Northern Prairie Wildlife Research Center in Dixon, California was removed from the U.S. Fish and Wildlife Service on 1 October 1993 and is now part of the newly-formed National Biological Survey.

The USFWS (Oregon State Office - ES) has completed fieldwork for its investigation into the effects of organochlorine contaminants on **Double-crested Cormorants** nesting in the Columbia River. The study involved monitoring three colonies, two on Rice and East Sand islands and a third reference colony on Hunters Island located on the southern Oregon coast. Monitoring activities included productivity surveys on the two Columbia River colonies and collection and submittal of eggs for chemical analyses of organochlorine pesticides, PCB's, dioxins, and furans. Additional plans entail enzyme induction bioassays to be conducted on eggs (H4IIE rat hematoma cell bioassay) and pipped embryos (cytochrome P-450) to relate levels of enzyme induction to concentrations of dioxin equivalents and exposure to planar halogenated hydrocarbons. Results from this investigation will be used to determine the nature and extent of impacts of fish-eating birds associated with consumption of contaminated fish in the river.

This year (1993) was the first full year of operation of the Seabird Aviary at the Oregon Coast Aquarium in Newport, Oregon. Propagation efforts in the aviary got off to a good start with a total of seven **Tufted Puffin** chicks produced including one from a pair of two year old birds. Several chicks were hand reared and growth rates measured. Radio telemetry equipment was installed and used to measure incubation temperatures of Tufted Puffins. An egg was successfully artificially incubated using the data collected. The aquarium is looking forward next year to the sexual maturity of their **Rhinoceros Auklets** and **Pigeon Guillemots** and continued work developing protocols for artificial incubation and captive propagation.

Robert Pitman, with the assistance of the Oregon Coastal Refuges Office, is continuing a long term study of the reproductive biology of **Leach's Storm-Petrels** on Saddle Rock, Oregon. Banding of storm-petrels was initiated here in 1979 and has continued annually. To date a total of 5,567 birds has been banded, including 2,761 adults and 2,806 chicks, and 145 recaptures have been made.

Robert Loeffel and **Don** and **Sara Brown** are continuing their long-term, year-round beached bird mortality study on 7.4 km of beach just south of Newport, Lincoln County, Oregon. This study is now in the 16th consecutive year.

Roy W. Lowe

Tillamook Rock and Lighthouse Protected

Tillamook Rock and Lighthouse are now included within the boundaries of Oregon Islands National Wildlife Refuge. Although the rock and lighthouse remain in private ownership, they have been placed in the refuge under terms of an "in perpetuity" conservation easement. The rock and the lighthouse structure provide nesting habitat to more than 400 Brandt's Cormorants and 8,000 Common Murres. The owners, Eternity At Sea, operate the lighthouse as a commercial columbarium where urns containing the cremated remains of humans are placed.

Within the terms of the easement, Eternity At Sea retains ownership and the rights to operate the facility as a columbarium. They will fund and perform all maintenance and preservation of the historic structures on the rock. In order to protect seabirds, Eternity At Sea has agreed that no one will be allowed to go on the rock during the seabird nesting season of April-August. All work and placement of urns on the rock will be done during the September-March non breeding season. The USFWS has agreed not to allow access to the island by anyone, will assist with any trespass problems and will continue to survey the nesting seabird populations there. The USFWS has also agreed to erect a high quality interpretative panel on the adjacent mainland in Ecola State Park. The panel will describe the history of Tillamook Rock Lighthouse, the importance of the rock to nesting seabirds, the private/government partnership in protecting the rock, and will identify the current use of the rock. Oregon State Parks has agreed to maintain the sign. A dedication ceremony will likely take place next spring.

Central California

Staff at the Elkhorn Slough Ecological Reserve and National Estuarine Research Reserve report that **California Clapper Rails** have not been seen around Elkhorn Slough since 1980, possibly due in part to the increasing non-native red fox population. Staff members **Andrew De Vogelaere** and **Steven Kimple** have developed an aerial balloon photography technique to observe the mixed **Great Egret** and **Great Blue Heron** rookery on the Reserve. The rookery has grown from 1 nesting pair of herons in 1985 to 27 heron pairs and 61 egret pairs in 1993.

Other researchers are also involved in studies on the reserve: **Dr. Andrew Thompson** of Santa Clara University is studying how sexual selection operates in monogamous birds, using the **Plain Titmouse** as an example, and **Mark Silberstein** is working with **Richard Zimmerman** and **Randy Alberti,** Hopkins Marine Station, on a seagrass restoration and biology project.

Pam Brynes is beginning a Master's Thesis through Moss Landing Marine Laboratories (MLML) to study egret foraging behavior and correlate habitat use with prey populations, while **Jennifer Parkin**, MLML, is focusing her thesis on a new **Caspian Tern** rookery in the Reserve restored marsh. There were 80 nests on the island last year.

Kristina Neuman and **Catherine Hickey** completed their senior theses at University of California/Santa Cruz with a report titled "The ecology and distribution of waterbirds in three pocket marshes of Elkhorn Slough, California."

Burr Heneman is the Director of the Pacific Region for the Center for Marine Conservation, at 312 Sutter Street, Suite 606, San Francisco, California, 94108; phone number 415-391-6204.

Paul Jones, Isidore Szczepaniak, Stephen Bailey, Michael Newcomer, Con Roberson, Jon Stern, and **Marc Webber** presented a paper titled "Seabird and marine mammal censuses conducted for the long-term management strategy" at the research workshop held by the National Marine Sanctuary in September 1993.

Gerry McChesney is working on his Master's Thesis at California State University/Sacramento. His study, the breeding biology of **Brandt's Cormorants** at San Nicolas Island, California, is part of a joint USFWS Northern Prairie Research Center/Pt. Mugu Naval Air Weapons Station project.

Jim Harvey and **John Mason** of the Moss Landing Marine Laboratory continue to monitor the monthly distribution and abundance of seabirds in Moneterey Bay using strip survey methodology. They survey one fixed transect and two random transects each month. Data from these transects will be compared with data from previous years and with oceanographic conditions. Harvey and Mason also conduct weekly surveys of three 2-km sections of beach to determine beachcast bird numbers and species for comparison with the data from ocean transects.

Harvey and Mason are also conducting seabird and mammal surveys at the Naval Disposal Site west of the Farallon Islands to determine the effect of dredge disposal on the distribution and abundance of birds and mammals in this area.

Student **Jamie Scholten** is examining the nesting ecology, behaviors, and ocean distribution of cormorants off Monterey.

The Gulf of the Farallones National Marine Sanctuary held the Second Biennial Workshop on Research within the Gulf of the Farallones in September 1993. Forty-six papers were presented, including several describing ongoing seabird research in the Gulf area. Proceedings (abstracts of all papers) can be obtained from **Jan Roletto,** GFNMS, Fort Mason, Building 201, San Francisco, California, 94123.

Harry Ohlendorf continues to specialize in wildlife toxicology with a special interest in the effects of contaminants on aquatic birds. Several of his current projects involve ecological risk assessments at Superfund sites and other locations where contaminants are of concern because of their potential effects on birds (as well as other animals and plants). He is also working on projects related to broader issues of wetlands and environmental enhancement.

Researchers from the Point Reyes Bird Observatory are involved in studies in several different locations. In the Farallon National Wildlife Refuge and Gulf of the Farallones **Bill Sydeman, Peter Pyle, David Ainley,** and **Elizabeth McLaren** continue to monitor breeding seabirds at the Farallon Islands. They are continuing demographic studies on **Western Gulls, Brandt's Cormorants, Cassin's Auklets,** and **Common Murres** on Farallon NWR. They are also conducting a study on diet, foraging behavior, and reproductive success in **Pigeon Guillemots** and **Rhinoceros Auklets** and investigating winter attendance by **Common Murres** and **Western Gulls.** In 1993, Sydeman, **Peter Hodum,** McLaren, and Ainley initiated a study investigating energy requirements and expenditure in **Cassin's Auklets** during the nesting season using the doubly-labelled water

method. Sydeman, **Walter Jarman**, McLaren, Pyle, **Keith Hobson**, and **Lloyd Kiff** completed sampling for an integrative study, begun in 1993, of contaminant levels, trophic structure, and interactions in marine birds and mammals in the Gulf of the Farallones and at Farallon NWR. **Nadav Nur, Glenn Ford,** Ainley, and Sydeman are developing computer models of Farallon seabird populations, including Common Murres Brandt's Cormorants, and Western Gulls, to provide tools for managers and researchers. Ainley, **Larry Spear,** Sydeman, and **Sarah Allen** continue to investigate pelagic distribution of seabirds in relation to prey in central California, using GIS and remote sensing techniques. Their study is being conducted in conjunction with the National Marine Fisheries Service.

Gary Page, Lynne Stenzel, Dave Shuford, and **Janet Kjelmyr** continue a shorebird ecology project, coordinating spring, fall, and winter shorebird surveys in coastal and interior wetlands of all states west of the Rocky Mountains. Staff and research associates of PRBO continue to monitor breeding success and juvenile dispersal of **Snowy Plovers** along Monterey Bay. They are also conducting winter population surveys along the west coast, including Baja California (note: any Snowy Plover sightings from Baja would be gratefully received). **John and Ricky Warriner** and Gary Page are participating in a project to protect plover nests from mammalian (red fox) predation using predator exclosures .

At Mono Lake, **Jan Dierks, Gary Page,** and **Dave Shuford** continue studying breeding success and population size of **California Gulls.**

David Ainley and **Bill Fraser,** Old Dominion University of Virginia, are assessing the impacts of the oil spill resulting from the sinking of the Bahia Paraiso at Palmer Station, Antarctica. David Ainley, **Larry Spear**, and **Chris Ribic**, EPA in Corvallis, Oregon, continue studies of pelagic seabird communities in the eastern equatorial Pacific.

Mark Rauzon introduced feline enteritis on Christmas Island in July 1992. It appears that this attempt to employ biological control was not successful. Efforts are now focusing on reducing seabird poaching and enhancing wildlife management activities with assistance from conservation organizations such as World Wildlife Fund, ICBP, and PSG.

Biologists at the San Francisco Bay Bird Observatory continue to monitor colonial nesting birds in south San Francisco Bay. **Jan Dierks** assists with these and other waterbird and shorebird studies conducted by the SFBBO.

Harry Carter, Gerry McChesney, and **Deborah Jory** completed a draft report (July 1992) for 1989-1991 surveys of all seabird colonies throughout the California coast. This report has been reviewed and more information on nesting terns and skimmers in southern California has been added. A final report will be produced in fall 1993. This project was funded by Minerals Management Service.

Carter, McChesney, Tracy Miner, and others continue to work with the Point Mugu Naval Air Weapons Station (**Tom Keeney**) and the Western Division office (San Bruno) to study seabird ecology at various Channel Islands and to develop a seabird monitoring program at San Nicolas Island, focusing on **Brandt's Cormorants** and **Western Gulls.** McChesney and Miner spent most of the summer on San Nicolas Island documenting extensive predation by foxes, cats, and **Great Blue Herons. Deborah Jaques** and **Craig Strong** completed a two-year study of roosting **Brown Pelicans** at Point Mugu and conducted surveys throughout the Channel Islands in September 1993. A final report is in preparation. These projects were funded by the Point Mugu Naval Air Station (Environmental Division) and through the Legacy Resource Management Program.

Harry Carter and **Jean Takekawa** (USFWS/San Francisco Bay National Wildlife Refuge) initiated an annual survey program for **Common Murres, Brandt's Cormorants,** and **Double-crested Cormorants** in 1993. Almost all coastal colonies in northern, central, and southern California were surveyed this year using aerial photographs and will be surveyed annually. Funding to date has been provided by the California Department of Fish and Game (Oil Spill Prevention and Response), the U. S. Fish and Wildlife Service, and the U. S. Navy.

Starting in fall 1993, the Northern Prairie Wildlife Research Center will be transferred to the newly-created National Biological Survey and will no longer be directly associated with USFWS.

Roger Hothem, USFWS/Pacific Coast Field Station, is conducting studies on contaminants and reproductive success in **Snowy Egrets** and **Black-crowned Night Herons** in two colonies in San Francisco Bay. He completed telemetry field studies in September 1993. **Carolyn Marn** and **Joe Skorupa** continue to investigate reproductive success in many species of waterfowl and shorebirds in the Tulare Basin in agricultural drainwater areas. This research station will also be transferred to the National Biological Survey in fall 1993.

Jean Takekawa, USFWS/San Francisco Bay NWR, participated in aerial seabird surveys at Farallon and Castle Rock NWRs in 1993, as part of a coastal California survey. New boat restrictions in the waters around the Farallon NWR have led to greatly decreased wildlife disturbance in 1993. Restrictions include seasonal closures (March 15 to August 15) to boat traffic within 300 feet of most of the islands, speed limits for all boats (5 mph within 1000 feet of islands, and noise restrictions for commercial dive boats engines and compressors. Regulations were designed to provide improved protection to seabirds and marine mammals, particularly to **Common Murres** and Steller sea lions. PRBO will continue to monitor wildlife disturbance and boat activity.

The **Snowy Plover** was listed as federally Threatened in October 1992. **Mike Parker** of the San Fransisco Bay NWR and other Refuge biologists continued to work with PRBO to evaluate the effectiveness of predator exclosures around Snowy Plover nests at Salinas River NWR and many other sites along Monterey Bay. Although exclosures were used around almost all nests in the Monterey Bay area, fledgling success remained very low, likely due to intensive non-native red fox predation. Furthermore, preliminary results indicate that exclosures may make adult birds more vulnerable to predation. Many more adults were lost in 1993 compared to average according to PRBO records. The use of exclosures is being reevaluated. Meantime, the Refuge developed and finalized a predator management plan and work was initiated in August 1993. Funding is being sought to conduct predator management in preparation for the 1994 plover breeding season.

California Clapper Rail monitoring and studies in San Francisco Bay are continuing. The population increased dramatically in south San Francisco Bay between 1992 and 1993, from around 300 to over 600 birds. These increases followed a year of predator management (mostly non-native red fox removal). **Joy Albertson,** Cooperative Education student with the Refuge, is continuing her Master's research on factors affecting reproductive success in **California Clapper Rails,** focusing on contaminants and predation. A paper describing the impacts of red foxes on clapper rails is in preparation, and radiotelemetry and contaminant data are currently being analyzed.

Dan Anderson, University of California/Davis, is involved in the California Department of Fish and Game study on pelican disease interactions and prevalence. He is continuing long-term monitoring studies on the seabirds of the Gulf of California.

Students of Dan Anderson include **Deborah Jaques,** who is completing her Master's research with on **Brown Pelican** communal roosting behavior and habitat use during the nonbreeding period; **Darcy Hu,** who is finishing her Master's research on age-related reproduction in **Red-footed Boobies; Pollo Moreno,** who is conducting his Master's research with on **White Pelicans** on the breeding grounds in northern California and wintering grounds in Mexico; and **Ruth Elbert,** who is investigating ecotoxicology in piscivorous birds for her Master's project.

D. Michael Fry is conducting a toxicity study to examine petroleum and dispersant effects on isolated red blood cells, as a model for hemolytic anemia of seabirds exposed to oil. He is continuing his work on pollutants in seabird eggs along the Pacific Coast. A study is in progress on mitochondrial DNA sequencing in **Marbled Murrelets** and auklets, comparing California and Alaskan populations. Fry and **Dan Anderson** continue their telemetry studies on the recovery of **Brown Pelicans** following release from cleaning centers.

Jay Davis is conducting his Ph.D. research with **D. Michael Fry** on the ecology and pollutant exposure in cormorants in San Francisco Bay and the Delta.

Frank Gress continues monitoring reproductive success of **Brown Pelicans** in the Southern California Bight. His long term monitoring project on **Brown Pelicans** at Anacapa Island includes food studies and breeding biology investigations. He is monitoring **Brandt's Cormorants** and **Pelagic Cormorants** and is studying the effects of the El Niño on seabirds of Anacapa Island. Gress is writing up the results of pollutant studies on **Brown Pelicans** and **Double-crested Cormorants** from 1977-1989. He and **Dan Anderson** are also writing up results from a telemetry study on the effects of oiling on **Brown Pelicans.** Data show that none of the rehabilitated birds returned to the colony to breed following their release.

Jean Takekawa

Mark Your Calendar!

Deadlines for submittals to the PSG *Bulletin* are **15 April** for the spring issue and **15 October** for the fall issue. Please make a note of these dates and plan your regional reports and other articles accordingly.

Also, please submit all material to be published on 3.5-inch disks. No 5.25-inch floppies!

Regional Reports

Southern California

(PSG members of the Southern California region are so busy with their research, I assume, that many were unable to return phone calls requesting an update on their activities with seabirds. Regional representative Kathy Keane, however, was able to garner the following information.)

Pat Herron Baird, who became a mom in May, is busy with **Least Tern** work, including discussions with the Los Angeles International Airport staff and the Los Angeles County Department of Harbors and Beaches to come up with an agreeable location for a new Least Tern nesting site. Pat had received approval in 1991 from the California Coastal Commission and local agencies for the creation of nesting site near Playa del Rey. A fence for this site, decoys, and a sound system emanating Least Tern calls were installed in 1992 but were ordered to be removed prior to the 1993 nesting season by the airport, which believed that Least Terns nesting there would pose a threat to aircraft! Pat also began a foraging study in 1993 to identify from a blind the species of fish brought to Least Tern chicks. She is also completing a biological study for an environmental group fighting a proposed development near the Hueneme Marsh near Oxnard, which supports Least Terns and a number of other sensitive species.

Lisa Ballance received her PhD from UCLA in June. She currently has a post-doc position with the Southwest Fisheries Center funded by the National Research Council. Lisa is continuing studies of seabird ecology in the tropical Pacific in conjunction, as before, with **Robert Pittman** and **Steve Reilly**. She is also studying the flight energetics of tropical seabirds, looking at how wing morphology and flight behavior influence the energetic costs of flight.

Charlie Collins again managed two **Least Tern** contracts with the Navy at Camp Pendleton in 1993. One was a continuation of long-term demographic studies of uniquely banded adult birds; this was the 5th year of the study. **Barbara Massey** and **Lisa Kares** are conducting various analyses of the data and writing up the results; however Barbara was in Madagascar (lucky soul!) during compilation of this report and could not be reached for the specifics. One paper is currently in press. **Lisa Kares** is finishing her master's thesis on pair bonds and mate fidelity with information gleaned from the extensive data file. The other **Least Tern** contract managed by Charlie was a continuation (the 11th year) of studies on the breeding biology of Least Terns nesting at three to four sites on Camp Pendleton. The base has recently supported a large percentage of the state's nesting Least Terns (17% in 1992), and the size of the nesting areas is continually expanding.

Aside from funding provided by military bases and a handful of other agencies including the Port of Los Angeles, no financial support will be available for **Least Tern** monitoring in 1994; apparently, most of the monies previously available from the California Department of Fish and Game were committed to the state's Natural Communities Conservation Plan. Recommendations fom PSG for future funding sources would be appreciated. **Carolee Caffrey** at UCLA has done an excellent job over the past three years coordinating all the **Least Tern** monitors statewide and compiling and analyzing data from the state's 35 nesting sites for annual reports.

Harry Carter, Gerald McChesny, Tracy Miner, Deborah Carter, Darrrell Whitworth, and **David Gilmer** of the USFWS Northern Prairie Wildlife Research Center are completing a final report on large-scale breeding population surveys for all seabird species from Point Conception to Monterey in 1989 and south of Point Conception in 1992. Aerial photographs were taken of most colonies of **Brandt's and Double-crested cormorants** on the Channel Islands and the Coronados Islands to determine population sizes. **Common Murres** near Monterey and **Brown Pelicans** at the Coronados Islands were also surveyed. The team also monitored the breeding success and human disturbance effects for **Brandt's Cormorants** and **Western Gulls** at San Nicolas Island. They will continue these studies in 1994. They will also be conducting population surveys in the Channel Islands in 1994 and will focus on **Xantus' Murrelets** and **Ashy Storm-petrels**, particularly at San Miguel Island.

Mary Beth Decker is expecting to finish her PhD in fall of 1994. She is examining changes in reproductive success and diets of seabirds in the Pribilof Islands with respect to surface temperatures and juvenile pollock abundance. She is also looking at seabird use here of tidal fronts, and at auklet foraging behavior in the western Aleutian Islands.

Bill Everett is still working through the Western Foundation of Vertebrate Zoology on several conservation projects in Baja California and is continuing to gather information on the range and distribution of the **Xantus' Murrelet**. He was also recently looking at seabirds (he claims) in French Polynesia.

John Konecny and **Doreen Stadtlander** of the USFWS Carlsbad office monitored five species of terns, **Black Skimmers**, and **Western Snowy Plovers** (yeah, I know they're not seabirds) nesting at Western Salt in San Diego County as part of the USFWS Bays and Estuaries Program. Approximately 10 pairs of **Gull-billed Terns**, 320 pairs of **Caspian Terns**, 410 pairs of **Elegant Terns**, and 10 pairs of **Royal Terns** were noted, and their breeding success was evaluated. Western Salt is an active saltworks; however, all dikes and ponds are not in use continually, and nesting occurs on dried salt flats.

Deborah Jaques and **Craig Strong** of the USFWS Dixon office completed a two-year study in September 1993 on **Brown Pelicans** in southern California. The study focused on disturbance effects at Point Mugu Naval Weapons Station and on their distribution and habitat use throughout southern California and the Channel Islands.

Kathy Keane is still desperately trying to publish her thesis amid teaching, conducting studies for consultations pursuant to Section 7 of the Endangered Species Act, and ccompiling the results of research conducted worldwide on the effects of wind energy facilities on seabirds and other birds. She also continues to monitor the **Least Tern** nesting area located in the Los Angeles Harbor and assists **Dr. Collins** with capture and banding of **Least Tern** adults at Camp Pendleton. In 1994, she will be monitoring the success of a shallow water area created for **Least Tern** foraging in Los Angeles Harbor.

John Konecny of the USFWS Carlsbad office is requesting information on **Gull-billed Terns** in anticipation of a formal status review on the species.

Pacific

The U.S. Coast Guard completed closure of its LORAN station on Kure Atoll in August of this year. The island is owned by the State of Hawaii and will continue to be managed as a seabird sanctuary. The State and the U.S. Department of Agriculture's Animal Damage Control (ADC) spent 45 days working to eradicate Polynesian rats from the atoll in July and August 1993. This trapping and poisoning effort reduced the rat population by 96%. Poison bait was left on the island and trips to assess and follow up the eradication effort are being planned.

The U.S. Fish and Wildlife Service and Animal Damage Control continued work on a rat eradication and control plan for Midway Atoll. The U.S. Navy has provided $100,000 through their natural resources Legacy program to implement this plan. The Service plans to use part of these funds to eradicate rats from Eastern Island, Midway Atoll during 1994.

Dr. Steve Kress of the National Audubon Society's Ithaca N.Y. office will head up a project to attract **Laysan Albatross** to Kaohikaipu Island off of Oahu, Hawaii. This is a cooperative effort between Audubon, Sea Life Park Hawaii, State Division of Forestry and Wildlife, USDA Animal Damage Control, **Dr. Causey Whittow** and the Pacific/Remote Islands Refuge Complex. The project is funded by the U.S Fish and Wildlife Service's Hawaii Bio-Diversity Joint Venture program. Albatross decoys and play back of recorded albatross courtship vocalizations will be the techniques employed. Initial work will begin in December 1993. The primary goal of the project is to attract birds that have been prospecting for nesting sites at several locations on Oahu over the past several years. The nesting attempts have been discouraged at airfields because of Bird Air Strike Hazards (BASH) and attempts at other locations have been unsuccessful due to predation and human harassment. If the project is successful in establishing a nesting colony, it will also provide excellent educational opportunities for local residents and tourists.

Rose Atoll National Wildlife Refuge was visited in March by biologists from the American Samoan Government. The biologists were transported by the U.S. Coast Guard vessel SASSAFRASS. During the one day stay on the island, all poison bait stations were replenished. No signs of rats were noted, however the short stay did not allow a conclusive determination of the status of rats on the atoll. A longer trip to the atoll is scheduled for October.

In the early morning of 14 October a 137' Taiwanese long-line fishing vessel ran aground on the outer reef of Rose Atoll National Wildlife Refuge, American Samoa. The vessel was carrying 100,000 gallons of diesel fuel and 80 gallons of lubricating oil. As of 18 October the vessel had leaked approximately 60,000 gallons of fuel. The U.S. Coast Guard Pacific Strike Team was activated and assessed the situation on 16 October. U.S. Fish and Wildlife Service biologists **Elizabeth Flint** and **John Hale** accompanied the strike team. Beth and John set out poison bait stations on Rose Island in case rats were present on the vessel. The Pacific Strike Team has deemed the vessel too dangerous in its present situation to remove additional fuel.

The Fish and Wildlife Service is working with the Coast Guard and vessel owners to have the ship removed from the refuge as soon as possible.

The U.S. Fish and Wildlife Service, Animal Damage Control, and The Wildlife Society hosted a predator control workshop on Oahu, Hawaii on 21 July of this year. Biologists **Graeme Taylor** and **Paul Jansen** from the New Zealand Department of Conservation were the guest speakers. They provided a half day of lecture and a half day of field demonstrations describing their efforts to control and eradicate rats and cats on New Zealand islands. The workshop was well received by over 60 federal, state, and private natural resource managers and biologists. **Taylor** and **Jansen** also visited Midway Atoll for a week to provide technical assistance on plans to eradicate rats there.

U.S. Fish and Wildlife Service cooperative education student **Nanette Seto** completed her first season of fieldwork on Midway Atoll. She is studying the breeding biology of the **Bonin Petrel** and the impact of rats on breeding success. She will be looking at the success of petrels in areas where no control efforts are used compared to areas where rodenticide is providing control. Other aspects of the project will provide methods for biologists to use to assess petrel populations and success throughout the Northwestern Hawaiian Islands and elsewhere.

The Naval Air Facility at Midway Atoll has been slated for closure by the Base Realignment and Closure Commission. Midway Atoll is also a National Wildlife Refuge managed by the U.S. Fish and Wildlife Service. The atoll is home to the largest **Laysan Albatross** colony in the world (430,000 nesting pairs). It is has the largest populations of **Red-tailed Tropicbirds, Black Noddies,** and **White Terns** in Hawaii, and is home to an additional eleven species of seabirds. The endangered Hawaiian Monk Seal and threatened Green Sea Turtle are also dependent upon the atoll for feeding, resting, and breeding.

The U.S. Fish and Wildlife Service (Service) has made known its interest in obtaining the atoll when it is made available. In the meantime the Service and the Navy are working together to identify environmental concerns, including contaminants and wildlife entanglement and entrapment hazards. At this point the Navy seems committed to completing a responsible cleanup of the base over the next five to ten years. The cleanup of this base is especially complicated by the high density and diversity of seabirds using the atoll.

Alaska Biological Research, Inc., Fairbanks, continued with the second year of a study on the distribution and flight behavior of **Newell's Shearwaters** and **Dark-rumped Petrels** on the island of Kauai, Hawaii. **Newell's Shearwaters** and **Dark-rumped Petrels** are listed as threatened and endangered species, respectively, by the U.S. Fish and Wildlife Service. The study, which used a mobile radar laboratory to monitor the nocturnal movements of these procellariiform seabirds, was initiated by **Brian Cooper** and **Bob Day** during autumn 1992 and was continued during spring and autumn 1993. The research is designed to delineate flight corridors to nesting colonies of the two species, to determine the effects of utility structures on the annual fallout (grounding caused by collision, disorientation, or exhaustion), and to develop mitigation measures that could reduce mortality. The study is funded by Kauai Electric and managed by the Electric Power Research Institute. Point Reyes Bird Observatory is also being funded by the Electric Power Research Institute. PRBO biologists are studying the natural history and population stability of **Newell's Shearwaters** and **Dark-rumped Petrels** on Kauai.

For an outline of projects currently conducted on the 'Ua'u -) at Haleakala National Park, contact **Cathleen Natividad Hodges**, Project Leader, Endangered Species Management, Haleakala National Park.

Chris Depkin has replaced **Donna O'Daniel** as the wildlife biologist for the Johnston Atoll National Wildlife Refuge. Midway Atoll National Wildlife Refuge biologist **Don Williamson** has transferred to Willapa National Wildlife Refuge in Washington State. The wildlife biologist position at Midway remains vacant due to budget shortfalls.

Craig Murdoch, Manager of Paparoa National Park in New Zealand will visit Kauai, Hawaii in October. Craig is facing many of the same issues with conservation of the **Westland Petrel** that are being faced on Kauai with **Newell's Shearwater** and the **Dark-rumped Petrel**. These include residential and industrial development in close proximity to breeding colonies; predator control, especially cats and dogs; lights, wires and disorientation of birds; and ecotourism operations. Craig is scheduled to meet with **Tom Telfer**, State of Hawaii biologist for the Kauai District; Alaska Biological Research Inc. biologists; Point Reyes Bird Observatory biologists; and **Richard Voss**, Refuge Manager for the Kilauea Point National Wildlife Refuge. It should be noted that coordination of this visit was facilitated by New Zealand PSG member **Sandy Bartle**, contacting the PSG Pacific Regional Representative. This is a good example the type of work that can and should be contributed by Regional Representatives and members.

A proposed rule to extend endangered species status to **Short-tailed Albatross** which occur in the U.S. was submitted by the U.S. Fish and Wildlife Service on July 21, 1993. Due to an inadvertent oversight, individuals of this species that occur in the United States are not officially listed as endangered, although all individuals which may occur in foreign countries are listed. Two individuals are known to regularly visit Midway Atoll in the Northwestern Hawaiian Islands and other individuals occasionally forage in U.S. coastal waters from Alaska to California. Contact **Heather M. Kershaw** at (808)541-1201 for further information.

Ken McDermond

Laysan Fever

Biologists and other workers in the Northwestern Hawaiian Islands have been developing a heretofore unknown illness ("Laysan Fever") at least since 1990. Symptoms of the illness include fever, loss of appetite, fatigue ,headache, bodyache, joint pain, and nausea. **Cedric Yoshimoto M.D.** has initiated efforts to identify the cause of the illness. A study using questionnaires has indicated that the illness primarily affects people who have spent time at Laysan Island and French Frigate Shoals, and it is probably transmitted to people by the bite of avian ticks.

Dr. Yoshimoto has been collecting before and after blood samples from field workers. This may lead to identification of an infection in the blood. If, however the cause of the illness is an organism which has not yet been discovered, such testing would not be useful. Therefore a second track is being taken to isolate a microorganism from ticks. This would provide an organism against which to test antibody in human blood. The ticks and blood collected during the 1993 field season are currently being analyzed.

Inland

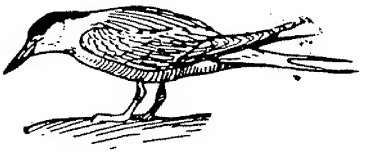
Several research projects are being carried out by Canadian Wildlife Service personnel from the Prairie and Northern Wildlife Research Center in Saskatoon, Saskatchewan. **Stewart Alexander** is studying use of leads in the ice of the Beaufort Sea by eiders. He also has a more extensive project on the feeding ecology of shorebirds at Quill Lakes, Saskatchewan. **Sherri Gratto-Trevor** has two projects concerning shorebirds in the Mackenzie River Delta, Northwest Territories: (1) investigating the use of LANDSAT images to identify breeding and feeding habitat, and (2) predicting the potential impact of global warming on shorebird populations and habitat. Heather Dundas is quantifying the nesting habitat requirements of the Piping Plover in Saskatchewan.

Personnel from the Canadian Cooperative Wildlife Health Centre (CCWHC) at the University of Saskatchewan in Saskatoon are doing several projects on inland seabirds. **Trent Bollinger** is coordinating a survey for Newcastle disease in Double-crested Cormorants across Canada. This project includes general surveillance for occurrence of the disease and sampling selected colonies for antibodies aga inst the causative virus in egg yolk. **Thijs Kuiken** is beginning an intensive study of causes of mortality at one breeding colony in Saskatchewan, also with a focus on Newcastle disease. The CCWHC regularly undertakes investigations of diseases in wild birds.

The Wildlife Branch of Saskatchewan Environment and Resource Management (contact: **Mr. Dale Hjertaas**) completed a census of **Double-cr ested Cormorants** in the province in 1992, and is currently estimating the population and productivity of **Piping Plovers** at six sites .

At the University of Wyoming, **Susan Gunther** has completed her Master's thesis (1993) entitled "Habitat selection by breeding **American Golden Plovers** on the alpine tundra of southcentral Alaska." Susan's research is the most detailed to date in an environment wher e birds have received almost no study owing to low breeding densities. **Clayton Derby** continues his Master's research on predation b y **Double-crested Cormorants** on stocked trout in the North Platte River.

Jim Lovvorn



Report from the Marbled Murrelet Technical Committee

S. Kim Nelson, Chair

1994 ANNUAL MEETING

The Marbled Murrelet Technical Committee will meet on Tuesday 25 January 1994 in Sacramento, California between 9:00 am and 5:00 pm. The morning agenda will include an update on Recovery Team activities and the Conservation Assessment, as well as discussions on the definition of an occupied site, and future research objectives. In the afternoon, subcommittees will meet to complete old business, and propose new protocols and projects. If you have any suggestions for agenda items please contact Kim Nelson at 503-737-1962 by 30 November.

THE CLINTON FOREST PLAN - OPTION 9

President Clinton has presented a plan to the public for management of the forests of the Pacific Northwest (within the range of the Northern Spotted Owl). The plan was written by a team of scientists, lead by Dr. Jack Ward Thomas, called the Forest Ecosystem Management Assessment Team. Within the plan there are provisions for the murrelet that were designed by the Marbled Murrelet Working Group, which included murrelet and agency biologists, and Recovery Team Members. Following is a brief outline of the murrelet management plan and an assessment of it's quality for the species survival and recovery.

Two zones were established for the murrelet. Zone 1, which was closer to the coast, was identified as very important to the murrelet, and Zone 2, which was further from the coast, was of lesser importance because of the low numbers of known murrelet detections in this area. The width of these zones varied by state as follows: In Washington, Zone 1 = 0-40 miles, and Zone 2 = 40-55 miles; In Oregon, Zone 1 = 0-35 miles, and Zone 2 = 35-50 miles; In California, Zone 1 ranged from 0-10, 0-15, or 0-25, and Zone 2 was 0, 10-20, 15-25, or 25-40 miles, depending on location.

All occupied murrelet sites will be preserved in both zones. An occupied site was defined as the contiguous suitable and recruitment (capable of becoming suitable in 25 years) habitat within a 0.5-mile radius. The 0.5-mile radius circle is supposed to be centered on the occupied behavior, or centered within 0.5 miles of the occupied behavior, whichever maximizes interior habitat. Surveys must be conducted in all proposed activities within both zones for locating all occupied sites.

In addition, within Zone 1, all late successional forests are to be preserved for the species. Late successional forests were defined by the Gang of Four (Thomas et al. 1992), and included LS/OG1, LS/OG2 and owl additions.

This plan for the murrelet will be laid on top of the Late Successional Reserves established for the Northern Spotted Owl and other late-successional forest species. The murrelet guidelines are proposed as interim until the Recovery Plan can be completed and implemented by Federal and State Agencies.

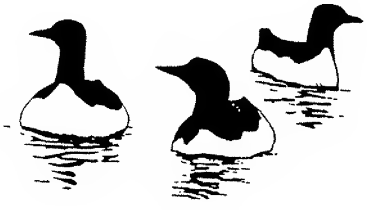
This plan will provide habitat for the Marbled Murrelet on Federal Lands within the range of the Northern Spotted Owl. However, it does not provide protection for the species outside the range of the owl, or on private and Stats Lands. The assessment teams that rated the chances of murrelet survival over the next 100 years decided that the species can not survive without consideration and protection on State and private lands, and at sea, in addition to the Federal Land protection. The Marbled Murrelet Recovery Plan will assess the quality of the plan for murrelet survival and recovery, and fill in any gaps necessary to meet recovery goals.

SPECIES STATUS

The Marbled Murrelet was listed as a threatened species by the U.S. Fish and Wildlife Service on September 30, 1992 (Federal Register 50 CFR, Vol. 57:45, 328-345, 1 October 1992). The Service is currently being sued by the timber industry for listing the murrelet. At question is the definition of a subpopulation and whether the listed population in Oregon, Washington, and California represents a significant portion of the species range.

MARBLED MURRELET SYMPOSIUM

Sixteen papers have been received for the second PSG Marbled Murrelet Symposium that was held in Seattle, Washington, in February 1993. The papers are being sent out for peer review, and publication of the symposium by the Northwestern Naturalist is expected before June 1994.



REGIONAL REPORTS

Alaska

In 1993, Kathy Kuletz (P.I.) continued the *Exxon Valdez* Oil Spill Restoration Project in Prince William Sound (PWS) and the Kenai Fjords National Park (KFNP), on the southern Kenai Peninsula. Nancy Naslund trained field personnel. Dennis Marks supervised the dawn surveys of KFNP, and will be comparing activity between forested and unforested sites in bays versus exposed coastlines. The U. S. Forest Service conducted concurrent vegetation surveys. Currently, we are all working on pulling together data from PWS, KFNP and the Afognak Island surveys (the latter conducted by Mary Cody and Tom Gerlach) to look at murrelet habitat use throughout the spill zone.

While in the KFNP, Dennis found a Marbled Murrelet ground nest, which eventually failed. We conducted a pilot study with Brian Cooper (Alaska Biological Research) using the marine radar survey method from a vessel in KFNP. In another pilot study, in conjunction with Rick Burns and Lynn Prestash, 9 Marbled and 1 Kittlitz's Murrelets were radio tagged in PWS in July. We tracked the murrelets among foraging and capture sites until August 11, but were too late to locate nests.

The Marbled Murrelet continues to be an important element in the decision making process as the Trustees Council decides which lands to purchase with oil spill funds. To date, good murrelet habitat has been secured on Afognak Island (near Kodiak) and in Kachemak Bay (Kenai Peninsula). Tom Gerlach, Division of Reality, has been assisting the Habitat Working Group in assessing suitable lands. A push towards a more comprehensive ecosystem study in PWS may include future studies on Marbled Murrelet foraging habitat and their prey.

Kathy J. Kuletz, U.S. Fish and Wildlife Service, Migratory Bird Management

British Columbia

The Marbled Murrelet group at the University of Victoria has completed its fourth season of field research, under the direction of Alan Burger. Forest surveys in the Carmanah-Walbran watersheds indicated that the peak of activity in 1993 was later than usual, and some sites showed significantly lower levels of detections that in previous years. A sixth nest was found in the study area, the first for Carmanah Pacific Provincial Park. A pilot study compared the timing and frequencies of visual and auditory detections with those made with high frequency radar. No murrelet activity was detected by radar in between the dawn and dusk peaks of activity. Marine surveys were continued in Barkley Sound and along the West Coast Trail, in collaboration with wardens from Pacific Rim National Park. Sharon Dechesne, a graduate student at UVic, is continuing her research into the interpretation of vocalizations of Marbled Murrelets at sea and over forests. A large sample of taped calls is being analyzed spectrographically.

Alan E. Burger, University of Victoria

At-sea surveys of Marbled Murrelets in Clayoquot Sound were continued in 1993 by John Kelson. This project began in 1992 to repeat standardized surveys originally done in 1982 by H.R. Carter. Similar numbers of birds were counted in the Sound compared to 1992, strengthening the indication that murrelet populations have declined 20-40% since 1982.

Intensive surveys were conducted at forested sites surrounding Megin Lake by Stephanie Hughes, Kevin Jordan, Irene Manley, and Bernard Schroeder. Murrelets were found in several forest types including Sitka spruce mix, western red cedar mix, western hemlock mix, and *amabilis* fir mix. In August, intensive tree climbing was conducted in two 5 ha^2 plots in a Sitka spruce flat on the northeast end of the lake, and random climbing was conducted in all forest types. One murrelet nest was located in a old-growth Sitka spruce tree. Murrelets were found to be more abundant at Megin Lake than previously described, however these birds may nest in relatively low densities in this pristine, unlogged area compared to other areas on Vancouver Island.

Intensive surveys were also conducted in other areas around Clayoquot Sound. A second murrelet nest was found along the Clayoquot River, by finding eggshells on the forest floor.

Stephanie Hughes, Clayoquot Sound

A team of four researchers, including Paul Jones as team leader, found the first **active** Marbled Murrelet nest in Canada on 7 August. The nest was in a yellow cedar tree in the ancient forest of the Caren Range. The chick was fifteen or sixteen days old upon discovery. The chick fledged successfully on 20 August. Good still and video footage were obtained of the nest, including some sound recordings

of feedings by both adults. The nest was examined after the chick left. Egg fragments, the entire egg membrane, a small dried fish and other details were collected and photographed.

For the third summer in succession, Paul Jones tracked and monitored murrelet activity in the Caren Range ancient forest. Dr. John Field, who had a small grant from Capilano College, joined in the efforts to monitor activity on the Caren. Field organized and co-led some of the forest occupancy studies in the forest. In mid-July, Dr. Jamie Smith, from the University of British Columbia, and S. Kim Nelson and Will Wright, from Oregon State University, visited the Caren to help with field studies.

In addition, Paul Jones conducted at-sea surveys between Pender Harbour and Wood Bay to record the marine activities of murrelets. One highlight of these surveys was finding a place where murrelets appear to leave the sea to fly up to the Caren Range, a climb of more than 1000 meters above sea level. A second highlight was establishing that two out of the four pairs, which regularly frequent Middlepoint Bight, were successful in fledging young, however only one young survived beyond September.

The Friends of Caren (FOC) published a childrens book on murrelets with some assistance from the World Wildlife Fund. The book, entitled *Marbled Murrelets: Mysterious Seabirds*, was written by Mavis Jones and illustrated by Paul H. Jones. Copies are available from FOC, Box 272, Madeira Park, B.C. Canada V0N 2H0 at a cost of US$5.00. A Murrelet Festival is planned for Sechelt on B.C.'s Sunshine Coast in mid-July 1994, which will include the Sechlet Indian Band. In the Sechat dialect, the murrelet is known as Spipiyos. Write the FOC for details.

Paul H. Jones, Caren Range, Sechelt Peninsula

Pilot projects tested the feasibility of two different lines of murrelet study. For 10 days in May, Andy Derocher (B.C. Ministry of Forests) and I explored the inlets on the southwest coast of the Queen Charlotte Islands looking for catchable concentrations of birds associated with mosaics of different forest types. We feel that the southern Queen Charlotte Islands are the best location along the B.C. coast for telemetry studies because nesting opportunities for murrelets are confined to small, discrete land masses. The inlets had up to 300 murrelets on the water and, once we took the time to study the birds' daily movements, we captured 9 birds at one site in one night. We feel ready to launch an operational project next year.

We also helped Kathy Martin initiate some meta-population and endocrinology studies based on feather and blood samples. We were able to catch 15 murrelets over three consecutive nights in Theodosia Inlet, about 100 km north of Vancouver. Preliminary results show that the murrelets in that group have very similar DNA profiles. We are also looking for a good gender marker that we can compare to physical morphology.

Gary W. Kaiser, Canadian Wildlife Service

Surveys of murrelets at-sea and in forests surrounding Mussel Inlet were conducted for a third season. Numbers of murrelets flying into and out of the inlet and adjacent forests were counted in May and June. In addition, we continued our project of capturing and radio tagging murrelets. Dan Varoujean was contracted to help with this project. Twenty murrelets were captured in floating mist nets and radio tagged. The radiotag attachment method, developed by Dan, involved suturing the tag on while the bird is anesthetized. Birds were tracked to and from foraging areas for up to 30 days. Some moved up to 50 nm west of the inlet to forage in the Straits of Georgia. One bird was tracked to a nesting site, but the nest tree was not located.

In July, we conducted contract research with U.S. Fish and Wildlife Service in Alaska. We captured and radio tagged nine Marbled and one Kittlitz's Murrelet in Prince William Sound (see summary above).

Rick Burns and Lynn Prestash, Mussel Inlet

Oregon

Intensive surveys for Marbled Murrelet nests, including ground searches for eggshells and observations of murrelet behavior, were conducted at three occupied sites in the Oregon Coast Range by Jeff Grenier, Kim Nelson (P.I.), Bob Peck, Toni DeSanto, and Meg Shaughnessy. The sites included Spencer Creek and Loon Lake (east of Reedsport, OR on Coos Bay BLM land) and at Valley of the Giants (east of Lincoln City, OR on Salem District BLM land). Numbers of detections were fewer and more sporadic compared to previous years. In addition, numbers of detections in 1992 and 1993 at Valley of the Giants were significantly lower than detections recorded 1990 and 1991.

A total of TEN nests were located in Oregon this year, doubling the number of known murrelet nests in the state.

Four nests were located during the breeding season. The first was found at Green Mountain, Salem BLM in mid-June. Murrelets were observed landing in three different trees at the site by BLM biologist Wayne Logan. One nest cup was verified by our crew on 17 June and another in an adjacent tree on 22 September. The third tree did not have any nest cups. We believe the birds never laid an egg at the site, but if they did, the egg or eggs were likely taken by a predator. The third and fourth nests were found at Valley of the Giants. Eggshells were located at the base of the same tree where murrelets nested the previous season (eggshells were also found under this tree in 1992). Upon climbing the tree, Paul Engelmeyer located three nest cups: one from 1992, one from 1993, and one old nest site. The 1993 nest was unsuccessful as was the 1992 nest.

In August and September, we climbed six of our old nest trees to photograph the nests and record any changes that occurred over time. Most of the nests were still evident (cup and landing pad), even three years after discovery. This information provided us with the necessary foundation to search for and find other nests by climbing trees. We then conducted a study at Valley of the Giants to test the success of locating nests by tree climbing, as an alternative to ground searches for murrelet eggs and conducting intensive surveys. We were also interested in determining murrelet nesting density. In a 70-m-radius plot, 25 trees (18 Douglas-fir and 7 western hemlock) were climbed. Five old nest cups and landing pads were found. This project will continued in 1994.

In addition, a second cup was located in our Five Rivers nest tree, within 5 m of the platform used in 1991. The cup contained many small eggshell fragments. A tree was also climbed on the Siuslaw National Forest (Mapleton R.D.) and two possible nests sites were found.

Toni DeSanto continued our analysis of murrelet vocalizations. We have identified at least 12 vocalizations in 4 call groups that the birds give during flight or from stationary locations in the forest. Bob Peck helped compile existing information on murrelet behavior from our active nest sites. Papers describing the vocal repertoire of the murrelet and behavior at nest sites will be included in the PSG Murrelet Symposium to be published in mid-1994. Jeff Grenier continued our examination of habitat data (stand structure and species composition) within existing Federal and State lands data bases in Oregon, to compare characteristics of murrelet occupied sites to unoccupied sites. In addition, Meg Shaughnessy continued to update the database of occupied, presence, and absence sites on all lands in western Oregon.

S. Kim Nelson, Oregon Cooperative Wildlife Research Unit

In August, Craig Strong and crew completed a second year of Marbled Murrelet surveys along the length of the Oregon coast. There were some areas of high murrelet concentration in central Oregon (>20 birds per transect km), but overall murrelets were far more dispersed and counts more variable than in 1992.

Dispersed murrelets at sea, combined with relatively fewer inland detections (see S. K. Nelson report), poor reproduction in other seabirds, and warm-water anomalies suggests that, in Oregon, El Niño effects were more severe in 1993 than in 1992. The summer surveys ended too soon to assess murrelet reproduction, but we did see fledglings on the water at the end of July, indicating at least some nesting success. More on this season's effort will be presented at the PSG Annual Meeting in Sacramento.

Craig S. Strong, At-Sea Surveys

Aerial surveys were conducted along the Oregon and Washington coasts by Dan Varoujean and Wendy Williams in late August and early September, respectively. Funding was provided to Dan's company, MARZET, by the timber industry. Survey results will be presented by the end of the year and will be summarized in the USFS Conservation Assessment.

In May and June, Dan conducted contract capture and radiotag work with Rick Burns and Lynn Prestash in Mussel Inlet, British Columbia (see summary above).

Dan H. Varoujean, Aerial Surveys

The first Marbled Murrelets surveys were conducted on State Lands (Oregon Department of Forestry) in 1989. These consisted of four general surveys conducted on the Elliott State Forest in the Coos Bay District (by S. Kim Nelson) and revealed the presence of murrelets. Intensive surveys began in 1992 on six State Forest Districts in western Oregon. A total of 32 occupied survey sites were found and 33 additional survey sites confirmed the presence of murrelets. One occupied survey site was found in the Astoria District, 19 in the Tillamook District, 4 in the West Oregon District, 4 in the Western Lane District, and 4 in the

Coos Bay District. Intensive surveys in 1993 were conducted on 7 Districts in western Oregon. Thirty-five (35) new occupied survey sites and 41 survey sites with presence were confirmed. One occupied survey site was found in the Astoria District, 6 in the Tillamook District, 4 in the West Oregon District, 4 in the Western Lane District, and 20 in the Coos Bay District. No murrelets were observed in the Forest Grove District.

Nancy Allen, Oregon Department of Fish and Wildlife

California

C.J. Ralph and a team of biologists at the Redwood Sciences Lab continued to monitor Marbled Murrelets from land, sea and air in northern and central California.

Efforts to identify the role of stand size and structural characteristics in determining activity levels of murrelets at inland sites were continued for the second breeding season. Additional forest stands in northern California were surveyed, and surveys were also conducted at stands in central California.

A new study was initiated this summer to determine how murrelet activity varies across large, contiguous stands of older-aged coniferous forest (i.e., "suitable habitat"). The study was conducted in most of the State and National Parks which contain the remaining large stands of older-aged forest in California, such as Big Basin Redwoods State Park, Prairie Creek Redwoods State Park, and Redwood National Park. Portions of these park lands were saturated with survey stations, allowing a detailed examination of varying murrelet activity.

Intensive morning surveys were continued for the **fifth** consecutive year at three sites established in 1989 for the purpose of long-term monitoring.

Intensive surveys adjacent selected portions of coastline and extensive surveys covering nearshore waters throughout the murrelet's range in California were continued in 1993. Survey vessels included inflatable boats, 17' and 21' Boston Whalers, as well as larger California Department of Fish and Game vessels.

In collaboration with Harry Carter, a study was begun to determine what percent of the murrelet population in California is comprised of juvenile birds. This measure of productivity is extremely important in developing a demographic model for the murrelet. Detailed data on behavior and plumage of murrelets observed on the ocean was collected from small boats in both northern and central California.

Aerial surveys of nearshore waters were also conducted during 1993, with coverage of waters from Monterey Bay to the Oregon border.

The Conservation Assessment, headed by C.J. Ralph, is progressing well. The assessment's goal is to consolidate information on murrelet ecology and habitat conditions to evaluate the likelihood of this species persistence in the future. **Numerous** persons have contributed their efforts, expertise, and provided invaluable data for this project. The final report, describing the assessment, its results and conclusions, will be completed by Spring 1994.

Brian O'Donnell, Redwood Sciences Laboratory

The Singers (Santa Cruz Mountains Murrelet Group), working in cooperaton with David Suddjian and a team of volunteer biologists, continue to investigate new and old Marbled Murrelet nest sites and associated flight and vocalization behavior in Big Basin Redwoods State Park. Although no nests were found this year, evidence suggests that an unsuccessful nesting attempt was made in the same tree that had successful nests in 1991 and 1992. An article describing the interesting murrelet usage of this tree is in press. They plan to continue to monitor this tree in the future.

With the support from the California Department of Fish and Game and San Francisco State University, Steve Singer is continuing a project that will locate all areas of remaining old-growth forest in the Santa Cruz Mountains and survey as many as possible for murrelet activity. This effort has revealed several new areas being utilized by murrelets, including at least one new probable breeding locale. This work will continue next summer.

Steve W. Singer, Santa Cruz City Museum of Natural History

During the 1993 Marbled Murrelet field season, The Pacific Lumber Company (TPLCO) conducted MAMU intensive protocol surveys on 43 transects on TPLCO lands. Individual survey stations for these transects totaled 343. Each station was visited at least once with many being visited up to four times. The company also participated in the USFS Redwood Sciences Lab studies of Park Lands. Personnel were provided to conduct intensive MAMU survey and vegetation analysis in Humboldt Redwoods State Park (HRSP). Eggshell search transit grids were conducted in ten stands on TPLCO and HRSP lands. Ten eggshell sites were found in four different stands. These

samples have been sent to the Western Foundation of Vertebrate Zoology to confirm eggshell identification and to determine if chicks hatched from the eggs. Tree climbing has occurred and is currently in progress to confirm nest sites. To date no confirmed nests have been found. Vegetation and stand structure inventory will be conducted in the areas where eggshells were found.

Ray Miller, Pacific Lumber Company

The Arcata Redwood Company (ARCO) has been surveying for Marbled Murrelets on their lands for several years. Much of ARCO property is bordered to the west by extensive parklands (Del Norte Coast Redwoods State Park, Prairie Creek State Park, Jedediah Smith State Park, Redwood National Park). This year, we realized that in order to address certain management considerations, we needed more information about murrelet populations in our region and not just in our timber stands. Therefore, we undertook an extensive survey project of parklands in cooperation with USFS Redwood Sciences Lab. We also consulted with Tom Hamer on the project.

Many murrelets have previously been seen and heard in the parks, but intensive surveys had only been conducted at a few sites. We conducted extensive, systematic surveys of large areas of the parks. We surveyed 266 stations throughout the parks and conducted some eggshell searches in areas of high activity. Some of the stands of old-growth redwood/Douglas-fir in the parks are up to 10,000 acres in size. One question of interest was, are the murrelets uniformly or patchily distributed within what appears to be fairly homogeneous habitat? Preliminary examination of the data suggests that the birds are patchily distributed within these large stands. Some areas show high activity, whereas others have very low activity. Another observation is that most high activity sites tend to be lower down on slopes near the creek bottoms as opposed to near ridge tops. Thus, topography and suitable habitat structure probably both play roles in determining murrelet distribution within large blocks of old-growth habitat in northwestern California.

In addition to surveying, we found 2 marbled murrelet nests by searching for eggshells on the ground. One nest was in a 54 inch dbh western hemlock located in Prairie Creek State Park. The nest was formed in moss that covered the limb. Most of the limbs on the tree were heavily covered with moss. The second nest was found in a large redwood (11 feet in diameter) located in Jedediah Smith State Park. The nest structure included a platform where debris had accumulated. Also, this nest was approximately 100 feet from a heavily used highway. It appeared that both nests were unsuccessful. There was enough evidence to document that they were Marbled Murrelet nests, however, there was no evidence, such as a fecal ring or whitewash that would indicate a chick was present on the nest for any length of time.

Lee Folliard, Arcata Redwood Company

National Biological Survey

On October 1, 1993, the National Biological Survey became a functioning bureau in the Department of the Interior. The reorganization took place at the direction of Secretary Bruce Babbitt and has not yet been approved by Congress. According to deputy director Eugene Hester, the NBS will serve as the focal point for an extensive network of information and technology transfer among other Interior bureaus, federal and state agencies and academic institutions. The 1,734 employees of NBS will be transferred from the following agencies: Fish & Wildlife Service (1,490), National Park Service (198), Bureau of Land Management (36), Mineral Management Service (4) and Bureau of Reclamation (6).

Short-tailed Albatross

FWS is considering a proposal that would update and revise the listing of the short-tailed albatross (*Diomedea albatrus*) under the Endangered Species Act. The current listing incorrectly fails to account for the fact that this species occasionally enters U.S. waters near Hawaii.

Mark Your Calendar!

Deadlines for submittals to the PSG *Bulletin* are **15 April** for the spring issue and **15 October** for the fall issue. Please make a note of these dates and plan your regional reports and other articles accordingly.

Also, please submit all material to be published on 3.5-inch disks. No 5.25-inch floppies!

Abstracts of the 1993 AOU Meeting

The American Ornithologists' Union meeting in Fairbanks in June included an all-day symposium on the effects of the *Exxon Valdez* oil spill on marine birds. The AOU meeting was the first time that both government- and Exxon-sponsored scientists shared a platform for the presentation of data and were not restricted by the confidentiality requirements that have stifled the exchange of information since the spill occurred in 1989. There is much yet to be learned: Points of agreement and disagreement were identified and some of the government-sponsored work is still in progress. However, the logjam has now been broken, and we can begin to reach a common understanding of the effects of this massive oil spill on marine birds. The abstracts from the AOU meeting follow.

Stan Senner
National Audubon Society

(Editor's note: These abstracts appear exactly as they appeared on the AOU's Standard Abstract Form and in the AOU program.)

Recovery of Seabirds Following the *Exxon Valdez* Oil Spill: An Overview. *John A. Wiens, Department of Biology, Colorado State University, Fort Collins, CO 80523.*

Assessing oil-spill "impacts" and "recovery" requires statistical definitions and a rigorous study design. comment on these requirements and identify three avenues of potential spill impacts on seabirds: on population size and structure, on reproduction, and on habitat occupancy and use. Over 35,000 dead birds were retrieved following the *Exxon Valdez* oil spill in 1989, and it was estimated that overall seabird mortality could be in the hundreds of thousands. Recovery of some species was projected to take decades, and recovery for some species has been projected to take decades. Concerns were raised about severe and persistent impacts on populations of several species, especially murres (*Uria* spp.). The findings of several studies conducted following the oil spill, however, suggest that these concerns may not be justified. Studies of seabird habitat use, colony attendance, and reproduction collectively indicate that, although some species were clearly impacted by the spill, the majority of species analyzed were not. The findings indicated that recovery of most of the species initially affected by the spill was well analyzed by 1991.

Use of Oil-affected Habitats by Birds after the *Exxon Valdez* Oil Spill. *Robert H. Day, Stephen M. Murphy (Alaska Biological Research, Inc., P.O. Box 81934, Fairbanks, AK 99708), John A. Wiens, Gregory D. Hayward (Department of Biology, Colorado State University, Fort Collins, CO 80523), E. James Harner (Department of Statistics and Computer Sciences, West Virginia University, Morgantown, WV 26506), and Louise N. Smith (Alaska Biological Research, Inc.).*

We examined the effects of the *Exxon Valdez* oil spill on the use of oil-affected habitats by birds in Prince William Sound (PWS) and along the Kenai Peninsula (the Kenai) in 1989-1991 by measuring abundance over a series of bays that were subjected to various levels of oiling. We defined a spill-induced impact as a statistical difference in a species' abundance among bays exposed to various levels of oiling, after habitat differences among the bays were taken into account. We considered recovery from spill-induced impacts to have occurred when we could no longer detect a significant difference in a species' use of bays with respect to degree of oiling. When our research began in June 1989, we could not detect negative impacts to use of oil-affected habitats for a majority of species. Most species that showed initial negative impacts had recovered by late summer 1991, although 6 of the 20 species initially impacted in PWS and 6 of the 12 species initially impacted along the Kenai did not exhibit clear signs of recovery by that date. We believe that the potential for recovery of these species is high. Overall effects of this spill on avian habitats appear to have been transitory.

Surveys of Murre Colony Attendance in the Northern Gulf of Alaska Following the *Exxon Valdez* Oil Spill. *David E. Erikson, Dames and Moore, P.O. Box 15204, Fritz Creek, AK 99603.*

Field surveys were conducted in July and August 1991 on 32 of the 36 murre colonies in the northern Gulf of Alaska to assess colony attendance 2 yr after the *Exxon Valdez* oil spill. The surveys focused on murre colonies because murres represented about 75% of the recovered seabird carcasses. Some claims projected large-scale mortality of murres leading to 60-70% decreases at some large colonies, and population recovery periods of 20-70 yr. Murres were present at all 32 colonies, and colony attendance estimates were similar to those from historical surveys, particularly for those colonies in the direct path of the spill (i.e. Barren

and Chiswell islands). Colony attendance levels in 1991 do not support the contention that murre colony attendance in the study area was drastically lower than historical levels. When colonies were grouped according to risk of oil exposure, the mean changes in attendance between 1991 and historical murre surveys were not significantly different among the groups Factors that could account for the observed similarity of 1991 and historical murre counts include overestimation of mortality or replacement of lost breeders through either recruitment of formerly nonbreeding individuals into the breeding population at spill affected colonies or immigration of murres from nonaffected colonies. In summary, the findings of this study suggest that impacts of the Exxon Valdez oil spill on murre colony attendance in the northern Gulf of Alaska were relatively short-term.

Common Murre Abundance, Phenology, and Productivity on the Barren Islands, Alaska, Following the *Exxon Valdez* Oil Spill. *P. Dee Boersma, Julia K. Parrish, and Arthur Kettle, Institute for Environmental Studies, University of Washington, Seattle, WA 98195.*

On 24 March 1989, the *Exxon Valdez* spilled 11 million gallons of oil into Prince William Sound. By 1 August, more than 30,000 seabird carcasses had been recovered. It was initially estimated that between 100,000 and 300,000 seabirds had been killed, 74% of them murres. The Barren Islands supports the largest seabird colonies within the path of the spill, and claims were made that: 1) the population suffered at least a 50% loss; 2) the remaining population underwent a change in breeding phenology, a breakdown in breeding synchrony, and a widespread failure to fledge chicks in the years following the spill; and 3) as a result, the population would take 20-70 yr to recover. We assessed the current status of the population of Common Murres (*Uria aalge*) nesting on East Amatuli Island by estimating island attendance, determining phenology, and assessing reproductive success of a subset of the colony. Population numbers from the 1990's were compared with the most recent historical data (1976-78). Our attendance counts averaged 35,000 birds, within the range of these estimates (19,000-61,000). Reproductive phenology, egg production, and chick production did not appear to be substantially different from similar data collected in 1977-79, with the exception of 1992, during which the murres failed to settle and production was extremely low. While the population may have sustained a significant mortality event, our efforts failed to disclose a large drop in island-wide attendance or a drastic reduction in reproductive effort.

Evaluation of the Toxic Properties of Naturally Weathered *Exxon Valdez* Crude Oil to Avian Species. *William A. Stubblefield, ENSR Consulting and Engineering, Fort Collins, CO 80524, and Robert K. Ringer, Institute for Environmental Toxicology, East Lansing, MI 48824.*

The toxic properties of naturally weathered *Exxon Valdez* crude oil (WEVC) to avian species were evaluated using the surrogate species, mallard duck (*Anas platyrhynchos*). Previous studies assessed the toxicity of unweathered crude oils, including Alaskan North Slope Crude, but little information exists regarding the toxicity of a naturally weathered oil, typical of that encountered following an actual taker spill. A battery of laboratory toxicity test was conducted, in compliance with standard or published test procedures, to evaluate acute and subchronic toxicity, food avoidance, reproductive effects, and direct eggshell application toxicity. Naturally weathered EVC, recovered post-spill, was used as the test material. Feeding ducks WEVC at oral doses or dietary concentrations representative of maximum likely field exposures from heavily impacted spill areas had negligible effects on survival, growth, and reproduction. Study results suggest that naturally weathered EVC posed little toxic risk to wildlife following the Exxon Valdez spill, particularly considering the environmental exposure conditions that existed in the spill-affected area after 1989.

Density and Production of Bald Eagles (*Haliaeetus leucocephalus*) in Prince William Sound, Alaska, after the *Exxon Valdez* Oil Spill. *Clayton M. White, Department of Zoology, Brigham Young University, Provo, UT 84602, and Robert J. Ritchie and Brian A. Cooper, Alaska Biological Research, Inc., P.O. Box 81934, Fairbanks, AK 99708.*

We conducted helicopter surveys in Prince William Sound (PWS) to assess effects of the 1989 *Exxon Valdez* oil spill on reproduction and numbers of Bald Eagles 1 and 2 yr after the spill. Densities were compared between an oiled and an unoiled area. In 1990 and 1991, densities were similar between areas. Nesting success was compared between territories oiled within 1 km of the nest and unoiled territories. In 1990, the proportion of successful nests, occupancy, and other indicators of nesting success were

similar between areas. In 1991, nesting success was higher in oiled territories but young/successful nest was lower. Differences between areas, territories, and years could not be attributed to oil. Overall, no demonstrable negative effects of the oil spill on eagle density or reproduction could be detected in PWS 1-2 yr after the spill.

Federal Government Announces $25 Million Alaska Land Purchase.

Secretary of Commerce Ron Brown announced on March 24, 1993 that the federal trustees will use $25 million of the $50 million in the Prince William Sound restitution fund to purchase land. Potential purchases include parcels within the Kenai Fjords National Park, and Kodiak National Wildlife Refuge. This $50 million federal fund is separate from the $900 million fund that is jointly administered by federal and state trustees.

Mark Your Calendar!

Deadlines for submittals to the PSG Bulletin are **15 April** for the spring issue and **15 October** for the fall issue. Please make a note of these dates and plan your regional reports and other articles accordingly.

Also, please submit all material to be published on 3.5-inch disks. No 5.25-inch floppies!

General Accounting Office Criticizes *Exxon Valdez* Restoration

The GAO's report ""Use of *Exxon Valdez* Oil Spill Settlement Funds" (August 1993) is generally critical of the functioning to date of the *Exxon Valdez* Trustee Council. The report was prepared at the request of Congressman George Miller, chairman, House Committee on Natural Resources. The GAO raised the following issues:

- Because an approved restoration plan is not available, annual work plans are not tied to a comprehensive restoration plan.
- The same federal and state agencies—and sometimes the same individuals—that recommend a project for funding also approve and carry out the project. Non-governmental organizations and individuals cannot competitively bid on projects.
- Habitat protection suffers from a lack of an approved restoration plan.
- Project reports are often submitted late and often need extension revision "because of such problems as incomplete analyses, overreaching conclusions, and imbalanced presentation."
- A permanent executive director has not been hired.

The GAO recommends (1) completing final restoration and land acquisition plans; (2) requiring more timely and better quality project reports; (3) providing for more open competition for restoration projects; and (4) improving internal controls.

The Trustee Council responded that it has advertised for a permanent executive director and that one should be hired soon. The Trustee Council also states that a final plan is scheduled to be released in December 1993. Finally, the Trustee Council intends to allow non-governmental organizations to bid on projects once the restoration plan has been completed.

Copies of the GAO report are free and can be obtained by calling (202) 512-6000. The GAO is an arm of Congress. Experienced observers believe that GAO investigative reports are sometimes slanted to reflect the views of the House leadership or the member of Congress who requested the report.

Other Seabird News

Circumpolar Seabird Group Meeting

In accordance with the 1993-94 work plan for the Conservation of Arctic Flora and Fauna (CAFF) Working Group, the U.S. Fish and Wildlife Service (Service), on behalf of the U.S., is hosting the inaugural Circumpolar Seabird Group (CSG) meeting. The CSG was scheduled to meet in Sacramento, California, prior to the Pacific Seabird Group meeting. Accordingly, the CSG meeting has been scheduled for January 20-25, 1994, at the Radisson Hotel in Sacramento.

The CAFF program is one component of the Arctic Environmental Protection Strategy which was adopted by ministerial declaration in 1991 in Rovaniemi, Finland, by eight Arctic countries.

The proposed goal of the CSG is to promote, facilitate, and coordinate seabird research, management, and conservation activities among the circumpolar nations including improvement of communication between scientists and managers concerned with northern seabird resources. The CSG will be comprised of up to two designated representatives from each of the eight countries signatory to the Declaration on the Protection of the Arctic Environment. Attendance at the CSG meeting, however, will be open to other seabird research, management, and conservation experts. We expect several seabird experts from nongovernmental organizations and other governmental agencies to attend the first meeting of the CSG.

Kent Wohl, FWS, Anchorage, has been designated as the Service's CSG representative and meeting coordinator. For additional information, please contact Kent at: telephone, 907-786-3444; fax, 907-786-3641; or e-mail, R7ARW.

WADER BIBLIOGRAPHIES

Two wader bibliographies are available from Ottenby Bird Observatory in Sweden. Volume 3 of the special report series contains 1364 listed references to the genera *Calidris* and *Limicola* ($7). Volume 4 contains 394 listed references to the genus *Phalaropus* ($4). Both prices include surface mail postage; for air mail, add $1. To order one or both volumes, send an international bank check or money order to Ottenby Bird Observatory, Pl. 1500, S-380 65 Degerhamn, Sweden.

ALERT
Arctic Seabird Managers and Researchers

I would like to alert you to a new opportunity to expose your work on northern seabird projects and activities to a circumpolar audience through the first edition of the Circumpolar Seabird Bulletin (Bulletin). This Bulletin is a new endeavor being conducted under the auspices of the Conservation of Arctic Flora and Fauna (CAFF) program which is a component of the Arctic Environmental Protection Strategy, adopted by ministerial declaration in 1991 in Rovaniemi, Finland, by eight Arctic countries.

The purpose of the Bulletin is to improve communication and exchange of seabird information between scientists and managers interested in northern seabirds. A by-product of the Bulletin should be improved coordination and cooperation in facilitating seabird projects and conservation activities of mutual interest.The Bulletin is not intended to be a refereed, journal quality publication nor is it intended to duplicate, replace, or compete with recognized ornithological publications or newsletters.

The U.S. Fish and Wildlife Service, on behalf of the U.S., has the lead for coordinating the completion of the first Bulletin by April 1994. The Bulletin will consist of one-page summaries of Arctic seabird research, management, or conservation issues, projects, and activities. The Bulletin will be an expanded version of, and is being modeled after, the successful bilingual Beringian Seabird Bulletin published in 1993.

I would like to invite you to submit an article for the Bulletin by December 17, 1993. You should submit a single-spaced copy and a copy on a PC-compatible 3.5-inch disk in Wordperfect 5.1 to Kent Wohl, Circumpolar Seabird Bulletin Coordinator, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, AK 99503. If you have questions please contact Kent at 907-786-3444 (Fax 907-786-3641).

Wanted: Book Review Editor

Requires Multi-year commitment

Contact George Divoky

Other Seabird News

El Niño Hard on Oregon Seabirds

The 1992-93 ENSO event has had dramatic impact on seabirds in Oregon. Elevated sea surface temperatures have persisted since October 1991 with warm water anomalies reaching as high as +2.7° C in some locations. Substantial upwelling that occurred in Northern California in the spring/ summer of 1993 extended into southern Oregon for a period of about 3-4 weeks in July but was of little consequence to seabirds that had already abandoned nesting activities for the year.

Impacts from the ENSO event during the 1992 breeding season were not as obvious as this year. In general, there were reduced numbers of most species attempting to breed at colonies but in the case of pelagic cormorants, those that did breed experienced high productivity. Common murre colony attendance was below normal but lots of chicks were produced. However, extremely heavy chick mortality in their first month at sea (July) may have wiped out most of the 1992 year class. In July 1992, very high mortality of adult and subadult Cassin's auklets was recorded. On a 7.4 km mortality transect conducted bi-weekly near Newport, Oregon, 134 Cassin's were recovered during July, while further north in Seaside, Oregon, a total of 379 Cassin's auklets was recorded on 19 & 22 July on a 16.1 km stretch. In southern Washington, Jim Atkinson conducted a beach check on 28/29 July in response to reports of large numbers of dead birds on the beach near Long Beach. Jim found 638 Cassin's auklets and 277 common murres on 16 km of beach.

Mortality recorded on Oregon beaches from November 1992 through February 1993 seemed to mirror some of the findings recorded in Alaska and California as reported in the last Bulletin by Piatt et. al. On a 7.4 km beach mortality transect near Newport, Bob Loeffel recorded 511 dead Cassin's auklets from November-February, an increase of 1,403% above his 14 year average. From December-February Bob recorded 91 dead common murres, 810% above the 14 year average.

By mid-May, when most common murres should have been incubating eggs, it was quite obvious that the number of birds in attendance at colonies was well below normal. By the end of the first week of June when coastwide aerial photographic surveys of colonies began, widespread abandonment of major and minor murre colonies was observed along the entire Oregon coastline. At Three Arch Rocks, where an estimated 220,000 common murres nest (largest colony of south of the Semidi Islands), no chicks were produced. Large numbers of eggs were laid at many colonies but were abandoned in mid- to late incubation, temporarily swamping scavenging gulls and crows. Further evidence of virtually no murre production this year was obtained from 140 nautical miles of small boat transects conducted between Florence and Seaside from 12-21 July. During these surveys, no murre chicks were seen on the water, where normally thousands would have been present. On these transects only 4 tufted puffins were recorded at colonies or on the water in an area where the majority of Oregon's 5000+ puffins breed. On Loeffel's beach mortality transect near Newport only 2 murre chicks were found this year, where normally his average is >400. This year is the worst breeding season ever reported for common murres in Oregon.

Pelagic cormorants were also severely impacted this year. At colonies located between Yaquina Head and Depoe Bay, reduced numbers of birds were present this year and 68% of the nests (n=778) were abandoned by 22 July. Nest abandonment continued after monitoring ceased. At Cape Arago, where Jan Hodder and students from OIMB conduct pelagic cormorant monitoring studies, complete abandonment of the colony had occurred by the second week of August an no young were produced here for them first time in 21 years of monitoring. With elevated sea surface temperatures continuing, 1994 may be another difficult year for seabirds unless conditions begin to change soon.

Roy W. Lowe

NORTH AMERICAN LOON FUND GRANTS

The North American Loon Fund (NALF) announces the availability of 1994 grants in support of management, research, and educational projects directly related to the conservation of the family Gaviidae.

Proposals in the range of $500 to $3000 are most likely to be considered for funding. Further guidelines for prospective applicants areavailable upon request from the NALF Grants Committee. Deadline for submission of proposals is December 15, 1993. Funding awards will be announced by March 30, 1994.

Please submit quideline request to the North American Loon Fund, 6 Lily Pond Road, Gilford, NH 03246.

Council for Bird Preservation Update

The International Council for Bird Preservation (ICBP) was founded in 1923 in Europe, and is the world's first international conservation organization. The U.S. Section of ICBP (ICBP-U.S.) was incorporated in 1964 by Roger Tory Peterson and Dean Amadon, among others. Today, ICBP-U.S. represents 42 North American organizations with interests in ornithology, including professional societies (Cooper Society), membership organizations (National Audubon Society and World Wildlife Fund), foundations (Raptor Research Foundation) and museums (Los Angeles County Museum of Natural History). At the suggestion of Craig S. Harrison, the Pacific Seabird Group's (PSG) Executive Council voted in 1981 to apply for membership in ICBP-U.S., and became its 17th member. The delegates to ICBP-U.S. meet three times each year to set priorities for bird conservation and to exchange information.

ICBP-U.S. has supported many conservation efforts that benefit seabirds. In the mid-1980s, ICBP-U.S. chair Warren King testified to Congress about the strip-mining effects of high seas drift-net fisheries on seabirds and other marine organisms. Warren's leadership on this issue ultimately resulted in an international ban on large scale drift-net fishing. ICBP-U.S. has assisted PSG's efforts to conserve Marbled Murrelets in the Pacific Northwest and Clapper Rails in San Francisco Bay, and has supported the removal of introduced predators from seabird colonies throughout the North Pacific.

ICBP established a Secretariat in Cambridge, England, in 1980 with Christoph Imboden as executive director. ICBP coordinates its international activities through national organizations such as ICBP-U.S. Among its activities, the Secretariat has published two technical reports on the status and conservation of seabirds and has developed maps of important bird areas throughout the world that should be conserved.

In early 1993, ICBP changed its name to BirdLife International and replaced the Osprey and Globe insignia with a stylized tern. In order to improve conservation efforts, the Secretariat has begun to replace the national sections with partner organizations in each country. For example, the Royal Society for the Protection of Birds is BirdLife's partner in U.K. BirdLife International hopes to have functioning partner organizations in every nation by the year 2000.

ICBP-U.S. is reorganizing to become BirdLife International's partner in the United States. As part of these changes, ICBP-U.S. is merging with the ICBP Pan-American Continental Section (which has interests in Latin America) and is forming a new board of directors that will include individuals with experience infundraising. PSG will retain its role in setting bird conservation policy, both in the United States and abroad. The new ICBP-U.S. will be the primary organization dedicated to bird conservation in the United States.

Malcolm C. Coulter
Craig S. Harrison
PSG Delegates to ICBP-U.S.

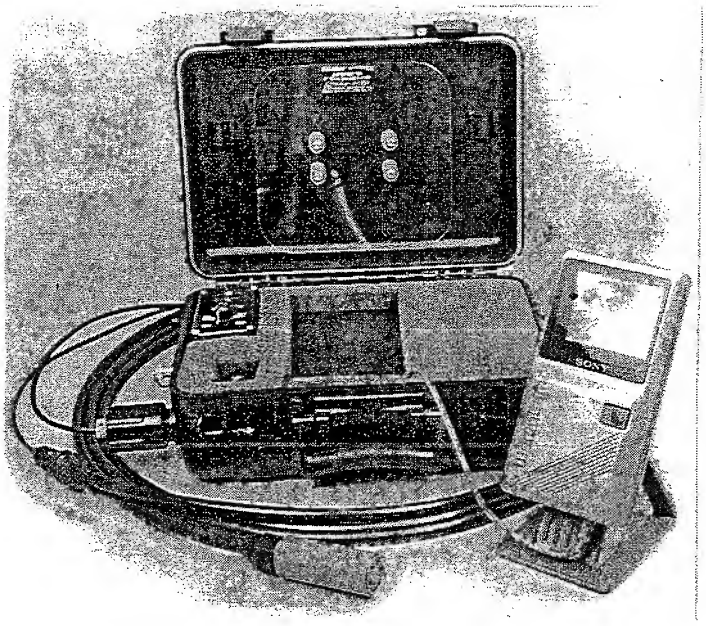
PSG STANDING COMMITTEE ON SEABIRD MONITORING

AGENDA FOR THE SACRAMENTO MEETING

The Standing Committee on Seabird Monitoring will meet on Thursday afternoon, 27 January, at the annual meeting of PSG in Sacramento. We will review progress to date on an inventory of past and ongoing seabird monitoring effort in the North Pacific and will also critique a prototype database management system for seabird monitoring results. The overall objectives of this committee are to plan and promote seabird monitoring internationally and to develop a comprehensive database that ensures the timely accessibility of seabird monitoring results to resource managers and scientists. All members interested in these topics are encouraged to attend the meeting and contribute their views and ideas. The committee will also consider and possibly recommend to the executive council a proposal to launch parallel efforts in the areas of colony cataloging and pelagic censusing of seabirds throughout the Pacific.

New Address?

Please send all address changes to Ken Warheit,P. O. Box 178, Tenino, WA 98589. Send all non-U. S. mail, e.g., Federal Express and UPS to 17225 Kent St. SE, Tenino, WA 98589.



(713) 470-8397 FAX (713) 470-8399
FUHRMAN DIVERSIFIED, INC.
905 SOUTH 8th STREET / LA PORTE, TEXAS 77571

PROFESSIONAL FIELD AND LAB VIDEO EQUIPMENT
ANIMAL CAPTURE, HANDLING, AND SAFETY EQUIPMENT

RICHARD FUHRMAN
MEMBER
AAZPA, WMI, SSAR, HL, TWS, AFS, AFH, ISZ, AOU, NACA, AALAS, NSA

(713) 470-8397 825-1333 (Cellular)
FUHRMAN DIVERSIFIED, INC.
905 SOUTH 8th STREET / LA PORTE, TEXAS 77571

MANUFACTURERS OF:
FLEXI-NETS/FURMONT REPTILE EQUIPMENT
FIELDCAM FIELD TELEVISION SYSTEMS

FIELDCAM Field Television Systems are presently *in use* at more than:

30 Universities 15 Zoos and Aquariums 20 Federal and State Agencies

5 Private Research Organizations

System configurations can include:

Color and Monochrome Cameras in High and Ultra-High Resolution Formats
Weatherproof and Waterproof Remote Camera Housing Rated to 200 Meters Depth
Remote Cameras Operable at a Distance of 1000 Meters from the Monitor/Recorder
Low Light Color(2.5 lux) and Ultra-Low Light Monochrome(0.1 lux) Cameras
Total Darkness Monochrome Cameras with Infrared Illumination Arrays
Ultra-Miniature Camera Systems (33 mm diameter by 65 mm long) with Infrared Ring lights
Real Time, Time Lapse and Pseudo Time Lapse Recording Formats
Remote Alarm, Timer Record and Matrix Timer Recording for Unattended Operations
Remote Zoom (up to 14 to 1) and Focus Lens with Remote Pan and Tilt Mounting Systems
Standard 8mm, Time Lapse 8mm and HI-8 Recording Formats(VHS & SVHS Compatible)
Color and Monochrome Monitors from 4 Inch to 25 Inch(diag.) in Weatherproof Cases
Internal Battery Packs with 110 VA(60 HZ) or 220 VAC(50HZ) Chargers
Solar Panel Systems and Adapter Cables for External 12VDC Marine Type Batteries
Camera to Subject Distances of 1 Cm to 500+ Meters
One to Eight (or more) Identical or Mixed Camera Inputs
Screen Formats Include Split Screen, Quad Screen and Picture in Picture
Overlays can include Identification, Time, Day, Date, Camera ID and Computer Output and many others.

Fortunately, you do not have to be a video or electronics expert to choose from this ever increasing array of video product and options. Instead, we say to you: *"DEFINE THE PROBLEM"* to us and let us quote a custom system that will allow you to observe and collect the data that you require. We understand user applications, equipment limitations and the protective environments required for video equipment to function reliably in terrestrial, aquatic, lab and field conditions. Our commitment is to provide you with the very best *USER FRIENDLY* field and laboratory video equipment available today.
Please give me a call to discuss your requirements.

RICHARD FUHRMAN, President

PACIFIC SEABIRD GROUP EXECUTIVE COUNCIL 1993

OFFICERS

Chair	George Divoky, 10535 Interlake Ave. N., Seattle, WA 98133 Phone and FAX (206) 525-2131
Chair Elect	John Piatt, USFWS, 1011 E. Tudor Road, Anchorage, AK 99503 Phone (907) 786-3549
Vice-Chair for Conservation	Craig S. Harrison, 4001 North 9th Street, Arlington, VA 22203 (202) 778-2240 FAX (202) 778-2201
Treasurer	Ken Warheit, P. O. Box 178, Tenino, WA 98589 (U.S. mail only); 17225 Kent St. SE, Tenino, WA 98589 (non-U.S. mail, Fed Ex, etc.) (206) 264-5886 (home-voice), (206) 664-8453 (work-voice), (206) 586-0248 (work-FAX)
Secretary	Beth Flint, USFWS, 300 Ala Moana Blvd., Rm. 5302, P.O. Box 50167, Honolulu, HI 96850 (808) 541-1201 FAX (808) 541-1216
Editor	Martha Springer, 1708 Marmot Hill Road, Fairbanks, AK 99709 (907) 479-8006
Past Chairs	Palmer Sekora, USWFS, 2640 E. Wilshire, Eugene, OR 29802 (503) 757-7236 FAX (503) 757-4450
	Malcolm Coulter, P.O. Box 48, Chocorua, NH 03817 Phone and FAX (603) 323-7730
	Doug Siegel-Causey, Museum of Natural History, Univ. Kansas, Lawrence, KS 66045 ((913) 864-4540 FAX (913) 864-5335

REGIONAL REPRESENTATIVES

Alaska	Kent Wohl, USFWS, 1011 E. Tudor Road, Anchorage, AK 99503 (907) 261-4670
British Columbia and Washington	David Nyeswander, Washington Dept. of Wildlife, Olympia, WA 98501-1091 (206) 664-9348
Oregon and N. California	Roy Lowe, USFWS, 2030 S. Marine Science Dr., Newport, OR 97365 (503) 867-4550 FAX (503) 867-4551
Central California	Jean Takekawa, San Francisco Bay NWR, Box 524, Newark, CA 94560 (415) 792-0222 FAX (415) 792-5828
S. California	Kathy Keane, 319 University #C, Costa Mesa, CA 92672 (714) 650-0654
Latin America	Enrique Velarde, Inst. de Biologia-Ornitologia, UNAM, Apdo. Postal 70-153, 04510 Mexico, D.F.
Pacific Region	Ken McDermond, P.O. Box 50167, Honolulu, HI 96850 (808) 541-1201 FAX (808) 541-1216 FTS 551-1201
Inland	James Lovvorn, Dept. of Zoology and Physiology, University of Wyoming, Laramie, WY 82071 (307) 766-6100 FAX (307) 766-5625
Great Lakes	James Ludwig, 2395 Huron Parkway, Ann Arbor, MI 48104 (313) 677-0050 FAX (313) 677-0055
Northeast	Mark Tasker, Nature Conservancy Council, 17 Rubislaw Terrace, Aberdeen AB1 1XE, United Kingdom (UK) 0224-642863 FAX (UK) 0224-643347
Southeast	Roger Clapp, National Fish and Wildlife Laboratory, National Museum of Natural History, Washington, D. C. 20560 (202) 357-1972 FAX (202) 357-4770 FTS 357-1972

DELEGATES TO THE INTERNATIONAL COUNCIL FOR BIRD PRESERVATION

Malcolm Coulter, address above
Craig S. Harrison, address above